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THE PAPER TRADE JOURNAL.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIV.—NO. 34. NEW YORK, AUGUST 24, 1895. WHOLE NUMBER 1112.

Trade Topics.

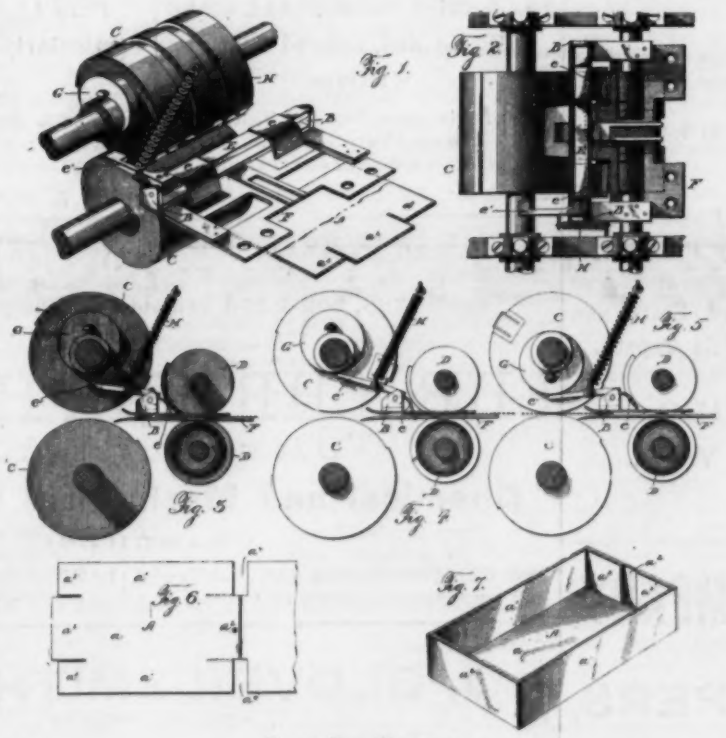
Paper Box Machine.

An improved machine for making paper boxes is herewith illustrated, Figure 1 being a perspective view of the improvement applied to and combined with the feeding and cutting rollers and bridge plate of a box making machine. Fig. 2 is a plan view, the upper feed roller being removed to show more clearly the construction and relative arrangement of parts; Fig. 3 is a side elevation, partly in section, showing the relative positions of parts immediately before the action of the wiper; Fig. 4 is a like view of the same after the wiper has expelled the waste pieces of paper board; Fig. 5 is a similar view of the parts after the wiper has been raised to admit the passage of a new box blank; Fig. 6 is a plan view of two of such blanks with intervening waste pieces, and Fig. 7 is a perspective view of a completed box.

In the construction of paper boxes—more especially those used for matches—the blanks are cut from a continuous strip of paper, and, as shown in Fig. 6, consist of a rectangular sheet, A, which has the necessary width to form the bottom a and sides, a' and a' of the box, and a length sufficient to form at each end of such box bottom an end, a^2, that corresponds in width to the width of the side strips, so that when both are turned upward to place their edges will be of equal height, as seen in Fig. 7. When the side and end strips a' and a^2 are turned upward to place, there is left at each corner a projecting portion, a^3, of the side strip a', which is then folded laterally inward and pasted upon the inner face of the adjacent end strip a^2 and operates to confine the parts in position so as to complete the box. If the width and depth of the box are properly proportioned the ends of the parts a^2 will be upon a line with the edges of the end strips a^2, and when folded inward their ends will either meet or will fall short of meeting; but should the depth of the box be increased then the parts a^2 and a^3 must be cut shorter than the ends of the blank to prevent them from overlapping when folded to place. This usually renders necessary the cutting of two rectangular pieces, a^4, from between the contiguous ends of two blanks, and such waste pieces frequently pass into and obstruct the operative parts of the machine and require to be removed before the work can proceed. This difficulty is prevented in this instance by journaling within suitable bearings, B and B, between the combined cutting and feed rollers C and C and the feeding rollers D and D, a shaft, E, which at suitable points is provided with two arms or wipers, e and e, corresponding in lateral positions to the positions of the side strips a' of the blank A as it passes from between the rollers C and C upon the bridge plate F, and are adapted to have their ends simultaneously impinge upon the upper faces of the same.

To one end of the shaft E is secured an arm, e', which from thence extends rearward and at its rear end engages with a cam, G, that is secured to or formed upon the upper one of the rollers C. A spring, H, having one end attached to the arm and its opposite end attached to a fixed support above the same, operates to draw such arm upward, and to cause the wipers e and e to be held with a yielding pressure downward upon the blank A when not prevented from so doing.

The throw of the cam G is sufficient so that when in one position it will permit the wiper arms to press freely upon a blank, A, while when occupying an opposite position the cam will raise the wiper arms until a new blank can pass freely beneath, and its movements are so timed as to cause the wiper arms to be raised and held in such position until a blank has nearly passed beneath, and then to permit them to impinge upon the blank until, by the action of the feed rollers C and C, the blank has been drawn beyond their engagement. As the side strips a' and a' of the blank pass from beneath the wiper arms the action of the spring H causes them to quickly move downward and rearward, and engaging with the waste pieces a^4 and a^4 will instantly "flip" them rearward out of the way. After such action of the wipers they are promptly raised out of the way of the incoming blank, and the operation described is repeated.



PAPER BOX MACHINE.

From Apprentice to Superintendent.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY B. F. FELLS.

To keep in the front and to be progressive and successful a paper maker must be continually alert to investigate all new inventions which may be likely to improve the quality of his product or increase his profits. It often happens that this investigation is made too hastily, that disappointment follows the adoption of a new idea or mechanism, and that consequently there is failure in securing the point sought. This ought not to prevent a second trial. Because one new process of treating stock has failed is no reason why another will. Many builders of modern paper making machinery employ salesmen to visit mills and show the merits of a new process or machinery.

Although the average mill proprietor does not like to be interviewed by anyone who has something to sell, it has always been my experience to note that manufacturers have been benefited time and time again by having their attention called to new inventions by agents. I believe that no mill man is living up to his privileges who neglects to utilize the visits of the machinery salesman, whether he buys his wares or has no present use for them.

Many of these salesmen are experts, and nearly all of the others are gifted with quick perceptions and retentive memories, and are constantly in all sorts of mills, good, bad and indifferent. The man who thinks that the machinery salesman is solely a repository of good stories is laboring under a mistake.

For various reasons some mill owners do not visit the mills of others, and consequently do not keep in touch with the march of improvement, and are surprised when a salesman comes along and offers for sale some new machine never before heard of. The old machine may work all right, and the quantity as well as the quality may prove amply sufficient to satisfy all parties interested, but if the new machine is more economical and is an improvement over the old the manufacturer should have it. If the product comes off all right it is hard to convince a proprietor of the need of changing. He will say that he has competent superintendents and foremen, who are satisfied with the machines, and that all is going well.

Is there no chance for improvement? Apparently there is none, for if all parties concerned are satisfied with the results, why has not perfection been reached? Are these men acquainted with the attainments of other men in this branch of industry? Are they familiar with the latest improved methods? If not, how is it possible for them to know that the utmost of perfection is reached? It is absolutely impossible for them to conceive it without the aid of a series of systematic comparisons with similar operations in numerous other establishments, by which means the general average is obtained. The agent of a reliable concern is a good man to get comparisons from, for he has traveled from East to West, has set up his machines in all sizes of mills, has been told about the production and other details, all of which are of intrinsic value to the men who do not travel. So when the salesman come along get him to talk. Pump him, and you may be surprised to find that he can help you out of a snarl or suggest something that you might have thought of yourself had you taken the time. You need not rip out your mill on his advice, but if you are half as shrewd as the average machinery salesman you can make his visits a source of knowledge to yourself as well as of profit to him; and this advice is particularly good for the apprentice, who, above all others, should get a wide knowledge of what is going on in other mills than his own.

Recently an agent of a paper supply concern referred to a new process for removing specks, &c., from wood fibre. The specks come from knots. The amount of labor which may be expended in removing knots depends entire upon the quality of fibre wanted and upon the machinery in the wash room, and upon this must be based the results. Sound white knots can be taken out after the pulp reaches the wash room, provided they have not been cooked too soft. Where an extra quality of bleached pulp is desired all dark knots should be carefully removed in the wood room, and, unless the wash room is especially arranged to take care of them, the white knots also. In removing specks, &c., the manufacturer sometimes throws away good stock.

This new arrangement is not only effective, but it is cheap. None of the machines have been made as yet, and none are therefore on the market, but any mechanic can easily make one. Build a large, square wooden tank about 8 feet deep. A perforated wooden shelf extends across the entire width and breadth of the inside of this tank, and upon this shelf are placed a lot of stones. On top of the layer of stones is put a quantity of pulp. Above the tank is a water pipe perforated, and a supply of water continually falls from it on to the pulp in the tank. A large number of the pipes are arranged side by side, so that the water will fall upon every part of the tank. The result of all this is to remove the pieces of sticks, burrs, dirt, knotty substances and other foreign matter. The water causes the pulp fibre to settle down close to the stones and foreign matter to rise to the top, where it can be removed.

Another new thing that a salesman brings information about is an electric alarm, which may be used with advantage as a choke alarm to tell when a hopper is empty. A small dry battery may be used. In constructing a choke indicator, attach a push board on the inside of the hopper near the top, with a hinge at the upper end. Fasten a wire to this push board in such a position that it will come in contact with an electric button on the outside of the chest. The sides and ends of the push board should be covered with ticking, so as to keep stock from getting under the board, which should be allowed to work freely. If a choke-up occurs the pressure of the stock on this board will immediately send an alarm to the electric bell. There is a subject which all beginners should investigate while they have the opportunity to do so, and that is discharging the colors from rags. A lot of rags may have been collected from the junkshop, or, perhaps, from the tailor's. In either case several colors will prevail. As a rule the mixture will assume a reddish brown color. The object of the discharging process is to remove or eject this color from the rags and prepare them for the subsequent operation of bleaching. The rags should be first looked over on the rag room floor. A good, even floor is particularly necessary in a rag house. In some mills the floors, which mostly consist of stone slabs, are continually subject to repairs, the slabs settling here and there, and holes being formed in places. A good, solid foundation is important. If the rags are damp they should be dried or they will mould. Sometimes they are mouldy when they arrive at the mill. Nothing accelerates the process of moulding so much as the natural impurities clinging to the material and the various ingredients introduced during the stages of manufacture.

Residues of dyestuffs, oil used for lubricating, glue, sizing, &c., in combination with the moisture used for the fulling, all contribute largely toward moulding. Where these impurities exist washing is necessary, followed by drying; then the color can be discharged. The method of discharging a red, black, dark brown, green or blue color from a lot of rags is accomplished by the use of the following ingredients: 150 pounds of rags; prepare with 14 pounds of sal soda; enter the stock and boil an hour and a half; draw off this liquor and finish with 5½ pounds of chrome, 9 pounds of alum, and 10 pounds of oil of vitriol. Enter this stock into this new bath, boil one hour and draw off. When the material is taken from the vat or tank in which it has been submitted to the discharging process it has a brownish color. The purpose now is to make it white. This is accomplished by bleaching in the usual way.

I have often been asked what is the indication that a young man wants to serve an apprenticeship? During my experience I have had many bright lads to assist me in mills, and each has told me that he always liked to be around a mill, and that this desire was so strong that he wanted to learn the trade. This is a sign that the young man is willing to bind himself to take a course in the mill from start to finish. He need sign no binding papers or agree to work in a certain mill five or seven years, as in former times, but he should make up his mind to stick by the business until he masters it. There is a need of apprentices. We have many good men to-day who are holding responsible positions and doing good work, but the supply must be kept up. I would say, however, to those contemplating a course of practical instruction in a mill: Do not get the "big head." If you follow milling, ten years from now, as you look back, you will see how little qualified you were to hold the position you now have. I would say to beginners who are quite sure that they can run the mill better than the superintendent: "Do not be in a hurry; you will know more after a while."

(To be continued.)

Principal and Agent.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

The wholesale dealer and the manufacturer must of necessity complete their transactions through the intervention of middlemen, and this involves the right of action against third parties in the event of controversy as to the exact nature of the deal, when it has been begun by the agent and the immediate parties are left to finish it, or when, through accident, intention or fraud on the part of the agent, the principal must take up the matter himself in order to effect a successful termination.

Those doings of an agent which render his principal liable to third persons impose upon the latter a reciprocal obligation to the principal, who, as he is subject to the burden, is likewise entitled to the benefit, whether he authorized the doing, or subsequently ratified it, and made it that of himself.

The principal may take advantage of all contracts made by his agent, whether his name has been disclosed or not, except:

1. Where the agent has contracted personally by deed.

2. When in a contract of sale the agent has a lien upon the subject matter of the contract or its proceeds exceeding or equal to the value, in which case the right of the agent is superior to that of the principal.

3. When an exclusive credit has been given to the agent.

This right of the principal, when it exists, is subject to the qualification:

1. Defenses founded upon the fraud of the agent are equally valid against the principal.

2. Where the agent has been allowed to contract as principal without notice, the principal takes the contract subject to all the equities and rights of which the other contracting party might avail himself in the transaction as against the principal.

Where a man pays money by his agent which ought not to have been paid, either the agent or the principal has a right of action to recover it back. This is also true of property wrongfully conveyed, or trust funds misapplied or converted into another kind of property, if its identity can be traced. At common law, a person in possession of goods could not confer on another, either by sale or pledge, any better title to the goods than he himself had. Such transfers, then, must be in the line of the duty of the agent, and apparently within the scope of his authority.

Where one pledges, exchanges or sells goods not his own the principal has a right of recovery, unless there be proof that the transaction was entered into under circumstances from which it might reasonably be inferred that the owner had given his authority to enter into the transaction. In other words, the purchase, pledge or exchange must be bona fide, and without notice that the agent is acting in bad faith against the interest of the real owner.

The principal has a right to rescind contracts effected by fraud, and any surreptitious dealing between one principal and the agent of another principal is a fraud upon the latter which courts of equity will set aside, and the party defrauded will be entitled to as full redress as under the circumstances can be given by a court. The contract may not only be set aside, but such

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further relief may be given as may seem adequate.

Some recent decisions on the right of the principal against third parties:

The Supreme Court of Iowa in the case of the Gilman Linseed Oil Company *v.* Norton (56 N. W. Rep. 663) held that an owner of flaxseed, whose buyer has sold some of it without his knowledge, is not prevented from reclaiming it because it was in the possession and control of the buyer while he was doing a business in other grains on his own account.

The Court of Civil Appeals of Texas in the case of Skeeters *v.* Slater Milling Company (23 S. W. Rep. 1000) decided that where cotton is left with an agent to be sold at the highest market price upon approval by the principal, a sale by the agent without the principal's authority or consent conveys no title.

The Appellate Court of Colorado, in the case of Savage *v.* Pelton (27 Pacific Rep. 948), held that the power to bind the principal of a traveling agent selling goods by sample being special, one buying his trunks of samples is bound to know whether such a sale is within the agent's authority.

It was held in the case of Gerard *v.* McCormick (29 N. E. Rep. 115) that one who receives from an agent payment of the agent's debt out of funds belonging to his principal is liable to the principal for the same where such payment was unauthorized, even though the payment was received in good faith without actual knowledge of the agent's want of authority.

Correspondence.

GREAT BRITAIN.

[FROM OUR REGULAR CORRESPONDENT.]

LONDON OFFICE PAPER TRADE JOURNAL, 1 MITRE COURT, FLEET ST., E. C., LONDON, England, August 10, 1895.

July trade, at a single stroke, has cleared the export deficit of the country as compared with last year, and has put a decent balance to the right side. For the first six months of the year we were about £4,000,000 behindhand; in July the increase of foreign trade amounted to over £10,000,000. The best of it is that there is not a single department of trade which does not share in the improvement, and as for the import trade the figures are even better. We bought £16,500,000 worth of foreign stuff more than in July, 1894.

In the paper trade everybody tells me that prices never seem to reach bedrock; they fall, fall and fall, as if the bottom were out of the universe; but for all that there is really a little more stirring. Talking about prices, a good object lesson of their tendency is afforded throughout the Board of Trade returns by comparisons of quantities and value. Take alkali and bleach, for instance. You are by far our best customer for both, and in June, 1894, we sent you 188,797 cwts. of alkali, for which you paid £229,825. In the same month this year we sent you slightly more, 188,977 cwts., for which you sent us a good deal less, to wit, £213,555. We charged you £114,240 for 55,998 cwts. of bleach in June, 1894, and only £129,770 for 72,209 cwts. in the same month this year. You cannot get a paper maker to allow that raw material and chemicals have fallen far enough to compensate him for the measly prices which he is getting for his product; and perhaps he is right.

Anyway in a lot of the cheaper description of paper the British maker cannot compete with his European brethren. I think for some years running I chronicled the adjudication of the contract for the Egyptian Government for salt bags. Salt is a monopoly out there by the Nile, and is sold only in the official bag. I forget how many of these are wanted, but it is a figure with a long tail of ciphers calculated to make a paper man smile all the way down his back. Anyway this nice little order used to come to England with extreme regularity, to a Bristol firm, if I remember correctly. Now it has gone abroad, possibly to stay. Mr. Hooker, the head of the salt department, explains himself as follows: "The offer of an English firm was 40 per cent. higher than that of an Austrian firm. The English firm wrote me a letter on hearing the result, in which they said it was impossible that the contract could be honestly carried out at the price. The contract is, however, being carried out satisfactorily. I enclose samples of bags furnished by both the English and the Austrian firms. The difference in quality is hardly distinguishable, but the saving to the Government amounted to £11,170 on the contract. For some years I have noticed with concern the inability of English manufacturers to compete with those on the Continent in certain classes of goods. The freight charges apparently do not affect the question, except in favor of the English manufacturer. The crux of the question is apparently the relative scale of wages in England and on the Continent. Our bags are made in Austria, at Trieste, where wages—especially those of women and children—are now extremely low."

The judicious Hooker goes on to rub the lesson into the hair of the British paper man, which is all very well in its way, but the British Government has the sole monopoly of this sort of thing. Do you suppose that if France were "cock of the walk" in Egypt she would let a paltry £11,000 persuade her to send the bag contract away from her own paper makers? Not much, she wouldn't!

My tale of the three paper machines for Borregaarde is like the story of the cats in the back yard. I believe that it reposes on the fact that the Kellner-Partington Company has been talking of putting up one paper machine. And yet since I reported the rumor to you it has appeared identically as I heard it in an English trade paper.

William Sommerville and Ernest M. Sommerville, of the Golden Valley Paper Mills, Bitton, have dissolved partnership, but I believe that this is only part of the legal process of turning the concern into a limited company, of which these two gentlemen, with W. Sommerville, Jr., will be directors.

The Sulphite Pulp Company, Limited, whose mill at Hjerpen, in Sweden, was seriously damaged by fire in July, 1894, seems to have had singularly hard luck over its insurance. It brought an action against underwriters to recover its proportion of a fire policy of £25,000. Now, it had other insurances, which it had allowed to lapse before the date of the fire, and neglected to apprise the underwriters of this in face of the fact that the only remaining policy contained the following clauses: (4) "When taking out an insurance the insured must state, and have specified in the policy, if the insured property is already covered by insurance;" (5) "So long as the insurance remains in force the insured shall notify to the company, and have specified in the policy, if some other insurance is taken out, or any insurance previously effected ceases;" (6) "Should the insured neglect to comply with the stipulations of Articles 4 and 5, the insurance shall cease to attach, and remain void until the stipulations shall have been complied with, and it shall be optional for the company, whenever such notification be made, however, to receive the ratable proportion of the premium for the unexpired term of the policy." The judge held that this condition, which the company had broken, went to the root of the contract and therefore gave judgment for the defendants. Very hard lines, but very sound law.

I note one more step toward the perfecting of the electrolysis of salt. A German patent has been taken out for the use of diaphragms made of alkaline earth carbonates. Successful attempts have been made to form them from moistened limestone dust and calcined magnesia under pressure. It is claimed that these diaphragms are particularly suitable for the electrolysis of salt, as they are permanent in the presence of the decomposition products and effect a satisfactory separation of them without introducing an undue resistance.

George Tankard, of Chorley Mills, Leeds, has patented an invention for the cleaning of the mesh of the wire gauze on paper making machines, while in position or off machine. The apparatus consists of high power atmospheric Bunsen gas burners, burning under pressure arranged in rows or series of small burners to form a continuous flame equal to the width of the wire web to be cleaned. These burners are placed under the bottom side of the wire web, extending across. Above the burners on the top side of the web is placed a deflecting plate, extending the length and width of the burners and composed of fire clay slabs or other refractory and non-conducting material, thus forming a furnace. Behind the furnace and fixed on the paper machine is placed a brush revolving against the wire and at the same time having a lateral motion, or a water, steam jet or other blower for cleaning dirt out. Behind the brush is a set of three flatting rollers arranged across the machine the width of the wire web. The paper making machine is then set slowly in motion, causing the wire web to travel between the burners and deflecting plate at such a speed as to allow of it being heated to a dark red. As it passes through the furnace on reaching the vacuum box the water cools the wire and the revolving brush scrubs the dirt out of the mesh of the wire. The wire then passes through flatting rollers, which straighten and take out all of the kinks in it.

Descriptions without end have been written of the making of paper in China, Japan and Corea, but a correspondent of the *Indian Engineer* mentions an Eastern method of manufacture carried on in Sikkim, Nepal, Bhutan and even in Thibet, which seems to be hitherto unrecorded. The first operation in the manufacture consists in stripping off the bark of a shrub (the Lepcha name for which is dana, and the Nepalese sissipat), removing the outer skin, cutting it up into small pieces and drying in the sun. When the pieces are thoroughly dry they are placed in a cauldron filled with water, and well boiled until they reach about the consistence of a jelly. The whole of this gelatinous mass is then removed to wooden mortars or placed on large stones and well pounded with poles and mallets until it is reduced to a pulp. The pulp is now placed in a rectangular frame about 4x3 feet, which is made of four pieces of wood or bamboo nailed to each other, and to which a cloth is attached by nails and well stretched. The frame with the pulp in it is placed in water to allow an even spreading on the surface of the cloth. After the pulp has been spread to the satisfaction of the operator, the frame is removed from the water and placed in the sun for about an hour or more until the paper is dry and ready for use. The prepared paper is of a light salmon color, and although rough and allowing the ink to run over its surface, is of a fine texture and difficult to tear. The bazaar rate for a sheet of about 4x3 feet is a pice. ALFA.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 20, 1895.

Public interest in the question of the lack of water power in this valley does not seem to wane in any degree, and the newspapers—all over the State—at all tributary to this district are talking about the situation. It seems funny, but it appears nevertheless to be the fact that the water in the lake is remaining just about stationary, notwithstanding that no water is being drawn out for manufacturing, and that this part of the country has within the past three weeks had a more than usually large quantity of rain. Whether or not the water is held back by the logging interests in the upper rivers, as has been suggested, is yet an unsettled question. All of the manufacturers seem to be too busy putting in their steam plants to make any investigation in this direction. Just now, however, the old project has been revived, and is receiving much attention, of diverting a portion of the water of the Wisconsin River into the upper Fox during times of low water here. The upper Fox and the Wisconsin come within a mile of each other, and as a matter of fact they are connected by a navigation canal with a lock holding the water back on the Wisconsin side.

There is really no reason in the world why the Wisconsin should not thus be made to help out the Fox, as below the point of junction there is no manufacturing, navigation or log rafting. The papers of Portage City, at the junction of the rivers, seem to be spoiling to have the thing tried, and the only thing that stands in the way is the Government, which has never been willing to agree to it, although it is susceptible of proof that navigation would be benefited rather than hurt by so doing. It is possible that after the manufacturers get their engines going, and have a little more time on their hands again, they may look into some of these matters. There is no doubt that something could be done if any organized effort was made to that end.

At Park Falls, where the new paper and pulp company of that name has been getting into operation, an unwonted amount of water came down the river early last week and did considerable damage. The pulp mill is built over the flume, and the flood burst the flume and let four of the six grinders down into the wreck. No one was hurt, and the work of hoisting them back into place and making repairs to the building has since been in progress. F. A. Leavens, of Neenah, formerly of the Winnebago Paper Mills, who was to be manager of the Park Falls concern, last week sold his interest in the company.

A dispatch from Ashland says that a new dam is to be built there, and it is said that a new paper mill is to be located upon it. It is further stated that the mill of the Ashland Fibre Company is to be remodeled.

The "Soo" power, with which the name of Promoter Butterworth was associated in the not distant past, has really been sold, it is said. An Eastern syndicate has purchased it outright. The St. Mary's Water Power Company made improvements to the amount of $250,000, and was then compelled to rest from its labors on account of lack of funds. Later the canal was sold under mortgage foreclosure and the last sale was made by the mortgagees, the price being $70,000. It is said that work will be at once resumed upon the canal, and that eventually a paper and pulp mill will be built in connection with the power.

The work of excavating the tail race at the mill of the Little Chute Pulp Company, which has been in progress all summer, was completed last week. About 6,500 cords of stone have been taken from the bed of the river, the excavation being made 4 feet in depth over an area about 600 feet long and 170 feet wide. This will give about 2½ feet more head for the wheels of the mill.

The bids for the construction of the new boiler and engine house for the Lincoln Mill of the Fox River Paper Company are all in, and it is expected that the contracts will be let in a day or two. The plans for the building were prepared by O'Keefe & Orbison, of this city, who will also superintend the construction. The plans show that the boiler house proper will be 44x50 feet in dimensions. It will contain four boilers, 78 inches in diameter by 16 feet in length. These boilers have been ordered from the Erie City Iron Works, of Erie, Pa. The engine house will be an average of 32 feet wide by 121 feet long. The buildings will be of stone and brick, and will be well lighted by skylights. The engine will be a Cross compound Corliss and has been ordered of the E. P. Allis Company, of Milwaukee. The diameter of the high pressure cylinder will be 20 inches and of the low pressure 36 inches, with a common stroke of 48 inches. At seventy-five revolutions the engine will have about 500 horse power. The driving belt for this engine was ordered yesterday from E. E. McCord, representing the firm of W. H. Salisbury & Co., of Chicago. It is to be 180 feet long and 46 inches wide and made of double leather. This will make it the largest leather belt in any paper mill in Wisconsin.

At the mill of the Atlas Paper Company the new Root boiler has been set and is ready to fire up, and at the Kimberly & Clark Company's mills the two new Root boilers are nearly ready. At both of these companies' mills the new steam engines have arrived and are being got into posi-

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tion. At the Atlas Mill, when the engine was ordered it was expected that there would be water enough to run the rag engines. When the engine is going, even if there is no water, there will be power enough to run the engines and two of the paper machines. At the Kimberly & Clark Company's mills the engine will be of 700 horse power and will run all of the machinery at full output, whether there is any water or not.

A slight accident happened last Friday at the factory of the Appleton Woolen Mills. The piston rod of the engine went through the cylinder head. The mill was compelled to shut down for repairs, but it is expected that it will be in operation to-morrow, as usual.

Great progress is being made in the rebuilding of the mill of the Wisconsin River Paper and Pulp Company. The buildings are all inclosed, and the placing of the machinery has begun. A portion of one of the paper machines has arrived and notice was received that the remainder had been shipped to-day. It is confidently expected that the mill will be in condition to make paper again by October 15.

A quantity of new machinery is also being set up in the mill of the Whiting Paper Company, at Menasha, preparatory to changing the product of the establishment to book paper, as has been spoken of in these columns. A stack of supercalenders and cutters and winders are being put in, and as soon as they are in place the change will be made on to book.

Another raft of 5,000 cords of Canadian pulp wood from the "Soo" arrived at the docks of the Pulp Wood Supply Company, at Long Tail Point, last week. Shipping has been resumed at the docks, the first train arriving in this valley last Friday. From now on shipments will be continued until the season's supply is stored in the yards of the mills.

Invitations have been sent out for the marriage of Myra, daughter of Mr. and Mrs. John R. Davis, of Neenah, to Charles A. Babcock, of the Whiting Paper Company and the Wisconsin River Paper and Pulp Company, which is to occur at the Presbyterian church in Neenah on the evening of September 4. The marriage is to be a very swell event, over 600 invitations having been sent out, and will be followed by a reception and dancing.

A. E. Jackson, of the John Strange Paper Company, of Menasha, will leave on Monday on a vacation trip to Chicago. He will ride down and back upon his bicycle, expecting to make the 180 miles each way in two days.

W. C. Skinner, representing the Waterbury & Sons Company, is in the valley, calling upon the paper trade.

George N. Friend and W. G. Green, of Chicago, called upon Appleton friends the first of this week.

C. D. Warren, of Chicago, was a visitor to the valley last week.

H. M. Carpenter, one of the stockholders of the Atlas Paper Company, came down from his home in Minneapolis last week to overlook his interests in this valley.

W. M. Mills, of the Dayton Globe Iron Works, is in this section taking orders for machinery.

T. T. Alberding, of Batavia, Ill., was a caller in this valley last week.

FOX RIVER.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, August 21, 1895.

Mill men express continued hope for a revival, but if they "continue to resume" their expectations much longer, lank legged fall will appear on the scene to make the condition a reality. There may not be a definite improvement before fall, but the midsummer trade has equaled past seasons with most of the houses in the valley.

Many manufacturers are not averse to making the statement—and they do it modestly, and with no insincerity—that "last month's business was greatly in excess of the corresponding month of the previous year, and that prospects for a better August showing are satisfactory." Yet every one in the trade appreciates the magnitude of the supreme dullness of last summer. This year's conditions were not to be compared in actual business affairs.

Miami Valley manufacturers may be confronted ere long with a more serious situation than they anticipate at present if a soaking rain fails to come and relieve the existing drought. In Dayton, and also down and up the valley, the greater number of mill men have equipped their plants with steam power, but there are a goodly number who depend upon natural and artificial waterways. The latter are now beginning to realize the exact status, and they are somewhat alarmed. This vicinity has suffered from the drought severely, but other paper making sections, such as those in the Wisconsin districts, have shown earlier effects. The canal is simply drying up with gradual progress daily, and those in a position to know claim that the Lewistown reservoir furnishing the supply will not be equal to the occasion for an extended future period. Such is the condition, and the results may be easily imagined.

The Perfect Safety Paper Company, of Franklin, was organized in the valley this week, with a capital stock of $100,000. The officers of the company are: B. B. Anderson, of Chicago, president; Elias Falk, treasurer; P. H. Rue, of Franklin, secretary. C. M. Harding, E. C. Hughes, Elias Falk and P. H. Rue constitute the board of directors. It will be the object of the company to manufacture a chemical safety paper, patented by Prof. J. B. Weis, of Franklin, and William Hoskin, of Chicago. The attention of the trade was called to this chemical paper some time ago, but at that time it was little expected to see the industry pushed so liberally by the strong arm of local capital. All who are interested in this organization are well known throughout the paper producing sections; they are practical men of the trade. Mr. Rue is a lawyer, and had charge of the Friend & Forgy assignment, and the subsequent sale and disposition of the mills. Most of the officers and directors are financially interested in other branches of the paper trade. Just what arrangements for the manufacture of the safety paper may be made are not known, but it would certainly prove most acceptable news to note the erection of a new mill in Franklin before the winter season advances. Your correspondent has sufficient faith in Franklin pluck and persistence, and a few other necessary qualities which are in frequent evidence in that hustling little city, to hope for such progress. Franklin has a wide diversity of paper making facilities, almost every branch having a representation. The necessary equipment for the Perfect Safety Paper Company may be found, in consequence, without material difficulty. The inventors are thoroughly practical mill men of extensive experience. Their investigations have continued over a long period, and have been crowned with success.

The county commissioners of Butler County have notified the Fox Paper Company, at Crescentville, to protect a public road near its mills by building a stone wall as marked out by the county engineer.

It is gratifying to note that the march of improvement continues grandly at Hamilton. Now comes the word that the Hooven, Owens & Rentschler Company, manufacturer of Corliss engines, has decided to erect a new plant on a magnificent scale. The present shops have been in operation for the past thirty years, and occupy an entire half square. They are thought to be inadequate for the rapidly increasing business, and it is the intention of the company to erect a new plant this fall, either in East Hamilton or on the grounds of the Fairgrove Paper Mill, recently purchased by a member of the firm. The capacity of the plant will be double that of the present one. Shops are now busy night and day.

A member of the firm in speaking of the proposed improvement stated that no definite plans had been consummated, although it is probable that work will begin in early fall.

M. M. Benson, for a period of years with the old Rogers Paper Company (which is now out of existence), and late with the Aull Brothers Paper Company, passed away after a lingering illness last week. The remains were interred at Springfield, and a number of Dayton friends of the deceased attended the funeral. Mr. Benson was generally acknowledged to be a first-class salesman, and while there were many who were his peers, few were his superiors. Months ago he found it necessary to retire from active work on the road, and a trip to California was considered his only salvation. His death followed. He was courteous and able, and possessed characteristics and a personality which won friends quickly in the trade.

E. B. Weston, of the Weston Paper Company, has been circulating in the East for the past fortnight with pleasant results. Mr. Weston covers that territory frequently and can climb a veritable ladder of trade acquaintances in Baltimore, Philadelphia, Boston and New York. He is not only a president of a paper concern, the head and manager of another, but a traveling representative—when he decides to take a trip—and can give many of the "roadsters" a 2:30 handicap and win on a mile heat. At least Secretary Stoppleman says that orders are coming in so rapidly that an extra office force was required this week.

A Dayton representative of the Wardlow-Thomas Paper Company, of Middletown, who spent a few days here this week, reports a general condition of drought in the East, Central and Northern States. Out West the communities have been more fortunate, but even there the favorable conditions appear in "streaks." Meteorological eccentricities struck him forcibly. While commenting on the situation to the writer a heavy rain descended in Dayton, and while the uptown districts were flooded it was later ascertained that the rain did not extend to the nearest suburb, 2 miles distant.

M. V.

ON THE WING IN BERKSHIRE.

[FROM OUR SPECIAL CORRESPONDENT.]

TYRINGHAM, Mass., August 19, 1895.

A most delightful drive from Pittsfield down through Lenox to Lee and thence eastward 5 miles lands one in the charming inland Berkshire County town of Tyringham. All of the way down to Lee the highway gives charming and surprising glimpses of the long stretches and beautiful windings of the romantic and busy waters of the upper Housatonic River, so thoroughly employed by the paper makers at Dalton, Lee and Housatonic, and so thoroughly popular with the clouds of summer residents and visitors from the mountain plain on which the city of Pittsfield has its eaglet eyrie down to the broad dim tree aisles of Sheffield and beyond. Such a panorama of mountains, hills, waters, upland and lowland, quiet nooks, wooded avenues, country residences, mansions, pretty homes and quaint old farmhouses never dotted an equal dozen miles of wayside as here, while each leap of the river down toward the waters of Long Island Sound is caught by the revolving turbines, and each spring on the hillsides feeds with its pure waters the engines of the great paper mills, or towns and villages with a domestic water supply.

Passing the lovely Lee park, facing on which are the elegant homes of the late Elizar Smith and Wellington Smith, the latter being the present well-known head of the Lee paper mill industries, one comes to the locality where, after a 10 mile tumble down from the Washington Mountain range, the famous Hop Brook debouches into the Housatonic River. This locality for a mile eastward has been for many years and is now a centre for paper making enterprises, and here every drop of water from this pure and never failing mountain stream is thoroughly utilized by enterprising paper manufacturers.

Hop Brook has a history, of which a good many other Berkshire County spring fed streams have not such interest, if any whatever. It flows out of Hayes pond, named for the ex-President, which is situated on the top of Long Mountain, and is 5 miles distant from the little rural village of Tyringham. From this pond it leaps and struggles through a deep and rocky gorge, and it received its humble name because of the immense growth of wild hop vines which formerly lined its upper banks for miles. On the first 5 miles of this stream are several mills which are exclusively engaged in making hand hay rakes from ash and hickory timber. At one period this was the largest depot for manufacturing hand rakes in the United States, and the product was shipped all over the world. The business is yet extensive, and home and foreign shipments are still very considerable. While the frames of the Tyringham rakes are made of ash, the teeth are of hickory, and the latter long outlast the usefulness of the former. It is said that the sturdy agriculturist of this and other lands has become acquainted with the lasting properties of these hickory molars and has learned to save them and to make new gums for them himself. This is said to have greatly lessened the demand for brand new rakes during the past few years.

Below the rake factories on the stream is the little village with its few residences, its single church and store and its grist mill. Just to the south of the settlement is a huge, partially wooded hill called the "Cobble," and between this and another hill called "Jim Cobble" Hop Brook flows through a narrow and rocky defile. Tradition has it that by some violent convulsion of nature the "Cobble" fell off the "Jim Cobble" into the little valley, disfiguring it with this saw-tooth eminence. From the "Cobble," whose summit is 1,100 feet above sea level, a grand near and remote prospect is obtained. At the foot of its southeast slope is the former 1,000 acre farm of the old Tyringham Shakers, which several years ago they sold, with buildings thereon, the survivors of the family going to the Shaker communities at Hancock and Enfield. This spot is one of the most beautiful in the country, and the famous Shaker Brook, on whose banks the Tyringham "Jerusalem" is located, waters it. Four hundred acres and the Shaker buildings are now owned by the Forest Club, of which George B. Satterlee, of New York, is president, and which has a membership of thirty wealthy individuals from that and other Northern cities, among whom are several members of the Century Club, of New York. The club opens its doors June 1 for four months each year, and all of its attachés are brought up from New York. Many new cottages are to be constructed next fall, and the season is now at its height in the banquets and festivities held there, at which visitors from Stockbridge, Lenox and Pittsfield are frequent attendants.

Looking down from the "Cobble" to the north is to be seen "Hickory Farm," presided over by Helen M. Fuller, and "Riverside," with the genial L. B. Moore for its host—two old farmhouse summer resorts of gilt edged popularity and favorites with Richard Gilder, of New York; Kenyon Cox, the New York artist; John R. Proctor, of Washington; General Cox, of Ohio, and other prominent men. Hickory Farm was formerly owned by paper maker H. D. Cone, of Stockbridge, and its acres are now devoted by F. M. Moore to horse stock breeding. The old mansion at Riverside is over 100 years old, was built by a Revolutionary soldier named Buttle, and fronts 175 acres of fine upland.

It seems rather odd that only a few rods east of this grand old Riverside farmhouse resort, on the banks of Hop Brook, the great paper mill interests which have made the town of Lee so famous in the past and present had inception. Here now stands a large lumber and saw mill, but on this very site fifty years ago the late Elizar Smith built a wooden structure, which received the singular name of the "Turkey Paper Mill." The brook now, as then, furnishes a fine and never failing motive power, and the wash water was brought hither a mile from one of the largest and purest springs in the county. At the first exposition held in Paris, forty-five years ago, Mr. Smith took the first premium for fine writing paper, which was made at this Turkey Mill. Several years later the firm became Platner & Smith, and after amassing considerable means the two removed to Lee and built up the great paper mills there. A Mr. Cassidy continued the manufacture of fine papers here until twenty-five years ago, when the old mill was burned. It was rebuilt, and Mr. Cannon, of South Lee, made photograph paper on this site for several years thereafter, but met with business reverses. Since then it has been run by M. W. Steadman as a grist and saw mill and rake factory.

Much interest has centred about Tyringham this summer from the fact that just across Hop Brook from Riverside Light Battery K, First United States Artillery, from Fort Hamilton, has been in "Willow Glen Camp" for drill and practice. For two years past the company has had its summer encampment at Peekskill, N. Y., but this year marched up the Hudson and struck across the country to Great Barrington and Stockbridge, where it was warmly welcomed. It is in command of Capt. John W. Dillenback, and with its five officers numbers eighty rank and file. Its four rifled 3.2 inch breech-loading Watervliet, 1893, cannon, four caissons and medical outfit are handled with sixty fine horses of the regulation bay color, draught, speed, weight, &c. Officers and men occupy twenty-five tents and the camp is under thorough army discipline, all commands being given with the bugle, which men and horses obey with wonderful precision and alacrity.

The target practice has been held at Fernside, a mile distant from the camp, and the guns, loaded with percussion shell and shrapnel were pointed upon Bear Mountain, the former wilderness home of Levi Beebe, the once famous Berkshire weather prophet. In the fierce cannonading, which waked up thousands of mountain echoes and which at times was fairly deafening, targets were struck at a distance of 6,500 yards and often over three miles in a straight line. It was interesting to learn that the United States had made great strides toward the front in its light artillery service since the late war.

Almost every New England town has its eccentric characters, and Tyringham is no exception to the rule. Here lives Daniel Clark, a natural geologist and a native, who has read a great many sermons in stones without the aid of schools and colleges. He is an object of much interest among the geological savants of the country, and his home is full of a "collection of rocks" which are valued at $30,000. Among his visitors during the present season has been Prof. E. B. Emerson, of Amherst College. Of an entirely different type of humanity is George L. Titchnor, a half-breed Indian, now sixty-five years of age, who for the past twenty-five years has lived in a little lone hut in a dense pine grove on Long

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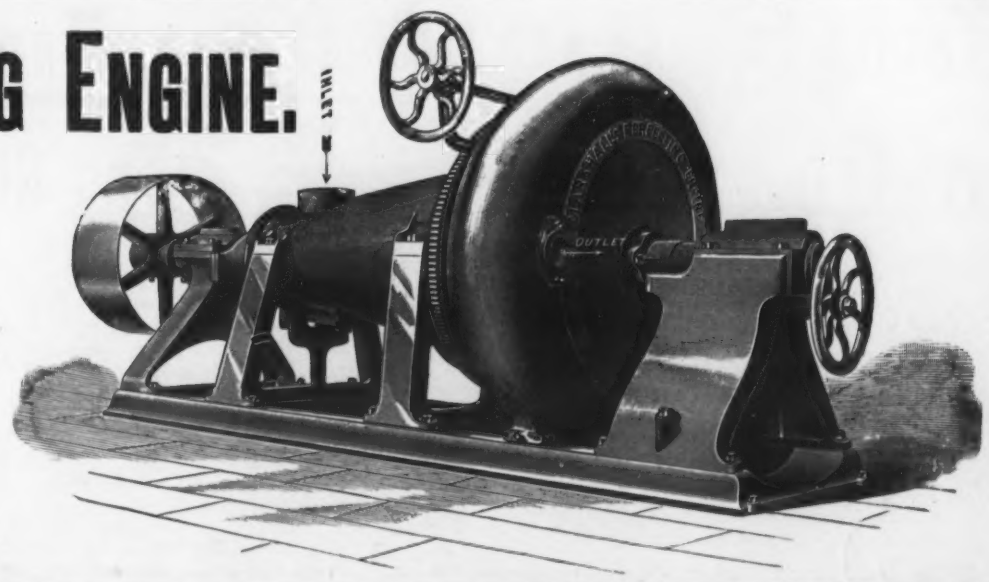

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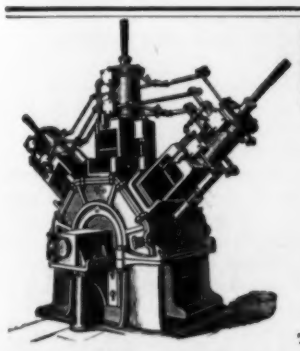

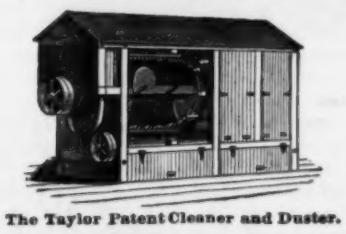

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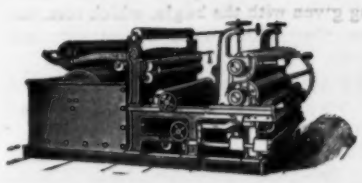

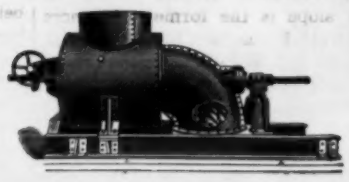

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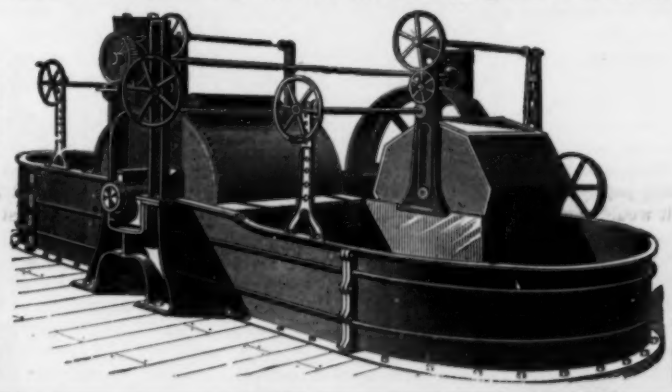

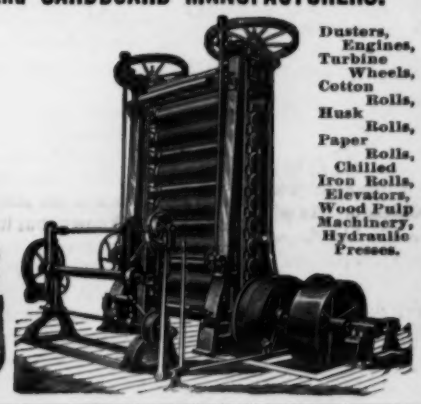

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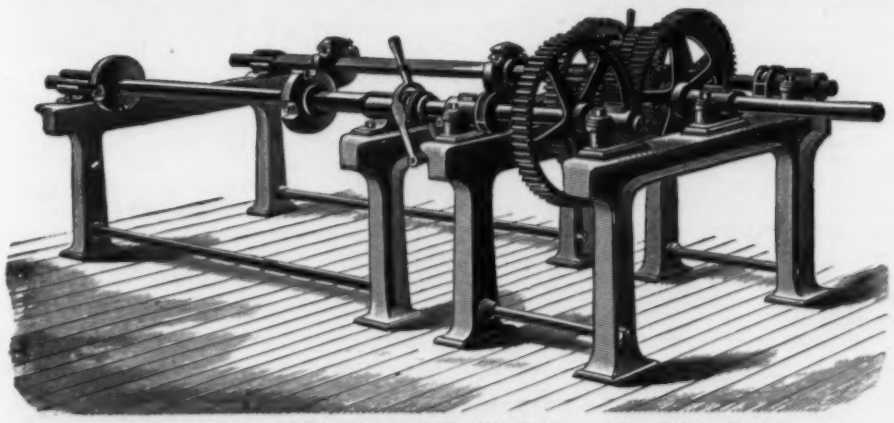

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Remember you can have a ***guaranty*** of the ***cost*** of ***your mill;*** also of the ***cost per ton to manufacture the pulp.*** Liberal terms.

I have on hand ***six Pulp Grinders,*** three pockets, to grind wood 17 inches long; and ***eight Grinders,*** heavy pattern, to grind wood 24 inches long; also ***Barkers*** and ***Splitters.***

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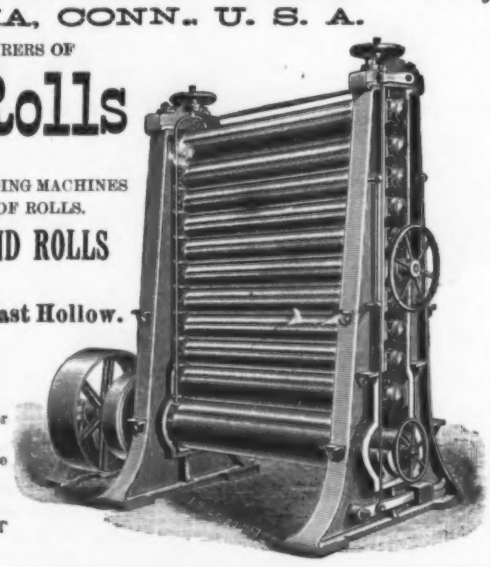

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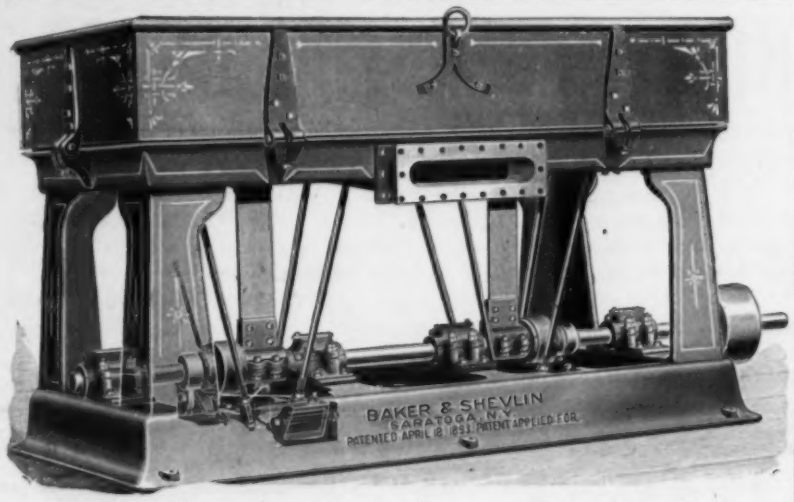

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CONTENTS.

INTRODUCTION.

General Laws of Chemistry; Principles of Chemical Physics; Chemical Arithmetic.

PART I.

General Chemistry.—With a short account of each element and its principal compounds; source, manufacture and properties of such compounds as are used in paper making.

PART II.

CHAPTER I.—**Cellulose.** Its chemical and physical properties, chemical relations and reactions.

CHAPTER II.—**Fibres.** Cellulose in its relations to the plant; the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, adansonia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres; growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots; analyses of woods; specific gravities; ash; fuel values; occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Resin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

CHAPTER VIII.—**Chemical Analysis.** Description of apparatus and methods for testing the purity and strength of all paper making chemicals, colors, &c.; common impurities and adulterants given; full description of methods of analysis for sulphite and soda liquors, bleach solution, alums, &c.

CHAPTER IX.—**Paper Testing.** Full account of the latest German methods for testing and classifying papers; determination of ash; kind of sizing; amount of sizing; free acid and chlorides; strength; proportion of ground wood; kind and condition of fibres.

CHAPTER X.—**Electro-Chemistry,** with reference to bleaching, manufacturing of pulp, manufacturing of chlorine and soda.

APPENDIX.—Metric system; tables of specific gravities; strength of solutions; list of sulphite patents, &c.

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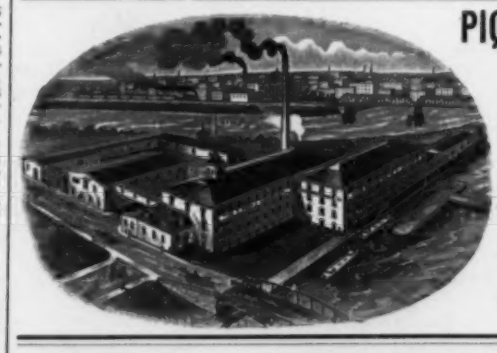

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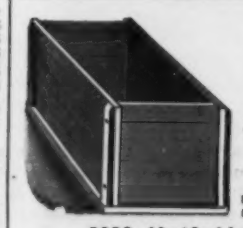

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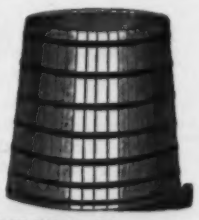

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Mountain, nearly two miles from a highway, and a long distance from any human habitation. When an infant his mother gave him to the Tyringham Shakers, with whom he learned to read and write, but in an epidemic which thirty-five years ago broke out in the community, and which eventually broke the family up, he took to the woods. A huge boiling spring, which is his especial pride, is in front of his cabin, and there he suffers strangers to slake their thirst, although he avoids all communication with them. He subsists by hunting and fishing and holds strictly to dressing his trout under water, which latter he sells to the few with whom he will deal at good, big prices. At times he will remain in his little shanty for months with his rude couch and primitive appliances for living, and when he comes down to town in his old slouch hat is full of savage wildness, which, however, wears off as he has intercourse with the white man, from whom he has a fever to extract the news of the day. What is a summer resort in the country without its mystery, be it a ghost, an echo or a hermit! Tyringham has its hermit, and this is he.

W. H. P.

NORTHERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., August 22, 1895.

The sole talk now in pulp and paper circles throughout the State is the new paper making syndicate which seeks to control the output of the large mills of the East. This section of the State will be well represented. Four concerns—to wit, the Remington Paper Company and the C. R. Remington & Son Company, of this city; the Taggart's Paper Co., at Felts Mills, and the Ontario Paper Company, of Brownsville — are scheduled for representation. There is a strong probability that a fifth company will be added to the list from this section. That is the Harmon Machine Company. It is not a pulp or paper mill, but it is a finely equipped plant which does all of the repairing for the four mills cited above.

It is understood that this plant is to be put into the syndicate at $100,000. It is one of the best equipped machine and repair shops in Northern New York. The company does an immense business with the manufacturers in this section, especially the paper mills. W. A. Russell, of the Fall Mountain Paper Company, who is at the head of the syndicate, visited this city early this month. He thought that all of the skilled mechanics attached to each mill, and whose wages amount to no small sum, could easily be dispensed with, and that one expert engineer could be employed to look after the four mills and have one central repair shop. This plan, he thought, would be cheaper for the mills in the long run. He was very favorably impressed with the Harmon Machine Company and its magnificent plant, and conferred with the owners of the four mills concerning the idea of securing it for the syndicate. The result is that the Harmon Company is entertaining a proposition to turn its entire plant over for a cool $100,000.

If the deal goes through the repair shops in the four mills will be abandoned. A few millwrights will be retained to keep track of the trivial repairs. If the syndicate buys the plant it will probably be enlarged, as the mills would naturally want to put some of the best men taken from the old repair departments in there, and it would take a larger force anyway than the one now employed to keep things moving if the plant was called upon to supply all four of these big mills with necessary repairs. The Harmon shops are splendidly adapted for this purpose, as they were originally built more for paper mill repairs than for anything else and they have always made a specialty of them. The stockholders of the Harmon Company are: E. B. Sterling, of the Ontario Paper Company; G. V. S. Camp, of the First National Bank, of this city; G. S. Knowlton and H. E. Harmon, of the Knowlton Brothers Company.

John Nelson, tired, footsore and weary, discouraged and disheartened after a 300 mile tramp in search of employment, landed in Great Bend on Sunday night and sixteen hours later was the victim of a severe accident, from which he narrowly escaped with his life. On June 1 Nelson bade his wife and family good-bye and left Jersey City to seek work. From city to city he traveled, and everywhere met with rebuff. He reached Syracuse a few days ago and was told that a new mill was being built near Carthage, where he could undoubtedly find employment. With eager anticipation Nelson started out, and when he reached Great Bend on Sunday had he been again turned down his courage might have failed him. As it was, however, he secured a job about three miles below Carthage, where Messrs. Herring & Stebbins, of Watertown, are engaged in damming the river, preparatory to erecting a large pulp mill. Nelson was placed with a gang of men engaged in building a pier for the dam. A huge derrick, which had been taken down the day before, was again placed in position and the men started hoisting stone. A huge block was tackled, and after being raised about four feet from the ground the men started to push it around into position. Nelson was on the inside. The strain proved too great and suddenly the derrick broke and fell. The other workmen escaped, but Nelson was struck by the timbers and felled to the ground, the derrick resting on his head and shoulders. He was restored to consciousness by means of artificial respiration. His body was badly bruised, his spine was hurt and he suffered internal injuries. No bones were broken, as if by miracle, and Nelson will possibly live.

E. W. Remington is quoted as an authority to the effect that the strike among the girls in the mill of the Watertown Paper Company was grossly exaggerated and that the girls have all returned to work.

J. T. Outterson, of this city, was at Ticonderoga, N. Y., this week attending a meeting of the directors of the Ticonderoga Pulp and Paper Company. This company is improving its plant on a large scale.

Mark James, an employee of the Dexter Sulphite Pulp and Paper Company, of Dexter, came near losing his hand recently. He was placing logs under the saw, when a block slipped and his hand was carried onto the revolving teeth of the saw. James succeeded in snatching it away in time to save his fingers although they were badly torn.

Robert McClinton, an employee of the International Pulp Company at Gouverneur, met with an accident in Mill No. 3 last week. The heavy crusher was dropped by removing a block and struck McClinton, pinning him to the ground and breaking a leg. He was also somewhat crushed and bruised.

W. E. T.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., August 22, 1895.

Regarding the state of local business little can be said that is new this week; but there are encouraging signs at hand, and there is an atmosphere of better things ahead which is bound to make itself felt soon.

In the first place, orders are beginning to come in more freely in some lines, and some manufacturers believe that the tide has begun to turn. The indications of an improved fall trade are not lacking by any means.

Some of the mills are beginning to advertise for additional help, and this is a sign that better business is looked for. A few of the mills are already feeling this impetus in the direction of increased business, and it is a welcome change from past dullness.

Fine writings are moving a little more freely, but business is not sufficiently tuned up in this line to cause much elation. There is a fair demand for book papers of the best grades. The call for coarser grades and specialties is also fair. Prices have not undergone any marked change, and there is little prospect of it at present.

Another accident occurred at the dam yesterday afternoon by which Edward Dooling had his face and ankle injured. He was at work in the bed of the river near a big derrick when the fastenings of the boom parted and he was struck in the face and thrown down. It was at first reported that Dooling had been killed. He will not be confined to his house very long.

The Fruin-Bambrick Company expects that the first stone for the new dam will arrive from the quarry at Deep River, Conn., by Monday. Everything is in readiness to begin work in earnest. The new cable hoist was used yesterday for the first time and works well. It has stood a test of 5 tons successfully and it will be a valuable adjunct in carrying material to the workmen.

George E. Smith, of this city, has through his attorneys, Brooks, Hamilton & Guyatt, brought suit for $5,000 against the *Transcript* Publishing Company for criminal libel. The *Transcript* published a paragraph last May describing a liquor raid on Mr. Smith's premises, which he thought was libelous; hence the suit.

Michael Guiheen, an employee of the Wauregan Paper Company, had his hand caught in the calender rolls last Saturday, and two fingers were badly crushed. Alfred Bieber, who is employed by the George C. Gill Paper Company, also had a hand caught in the machinery on Saturday, but escaped with the loss of one finger on his right hand.

Henry J. Dougherty, who was so badly injured at Jolly Brothers' machine shop last week, died of his injuries this week, and the funeral took place yesterday. Mr. Dougherty was twenty-nine years old and leaves a widow.

Thomas Stevens, the engineer employed by the Carew Manufacturing Company, who was severely scalded last week by escaping steam, may lose his life, as he is in a precarious condition.

Daniel H. Newton, the well-known manufacturer, who is president of the Wilmington and Hoosac Tunnel Railroad, will entertain the Hampshire and Franklin County Press Club at Lake Raponda on Monday.

The new addition to the Crocker Manufacturing Company's mill is receiving its roof. The building is four stories high and is very substantially constructed.

The American Pad and Paper Company is behind in its orders to such an extent that it is obliged to run its factory four nights a week to meet the demands.

Edward Breck, superintendent of the Powers Paper Company's mill, has received a tempting offer to assume a similar position in a Western mill. He has the offer under consideration.

James Ramage, of the Ramage Paper Company, with his daughter, sailed on the Circassia on Saturday last for a visit to Scotland, the trip to cover six weeks.

E. C. Rogers, of the Massasoit Paper Manufacturing Company, and his daughter have just returned from a very pleasant European trip.

H.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, August 22, 1895.

The only event of general trade interest coming to notice this week was the meeting of the sulphite fibre manufacturers, which was held yesterday at the office of the New England Sulphite Digester Company, No. 220 Devonshire street.

Those reported present at the meeting were: Henry Richards, of the Richards Paper Company; C. E. Johnson, representing the J. & J. Rogers Company; Major J. Fred Ackerman; Allen M. Fletcher, representing the Rumford Falls Paper Company and the Alpena Sulphite Fibre Company; James Conley, of the Manufacturing Investment Company; N. M. Jones, representing the Katahdin Pulp and Paper Company; Geo. E. Keith, of the Howland Falls Pulp Company; A. Hesselbacher, of the Michigan Sulphite Fibre Company, Detroit, Mich.; B. F. Hosford, with the Bangor Pulp and Paper Company; Theodore P. Burgess, of the Burgess Sulphite Fibre Company; F. C. Whitehouse, representing the Lisbon Falls Fibre Company; D. F. Cowles, with the Barclay Fibre Company; E. F. Birmingham, representing the Dexter Sulphite Company and the Remington Pulp and Paper Company; E. C. Hargrave, of E. C. Hargrave & Co.; E. A. Everett, of the High Falls Sulphite Pulp and Mining Company, and Fred Bertuch.

It is stated that the meeting voted to style the organization the American Sulphite Fibre Association, and the following named officers were elected: President, George E. Keith; first vice-president, Theodore P. Burgess; second vice-president, J. Fred Ackerman; secretary and treasurer, C. E. Johnson. The following named were elected a board of directors: Allan M. Fletcher, N. M. Jones, B. F. Hosford, F. C. Whitehouse and E. C. Hargrave. It is said by some that the organization as above outlined is to be permanent, while others claim that it is only temporary, since no plan of agreement relative to the conduct of the business has been adopted, and until that agreement is reached there is no plan of action to permanently organize upon. It is reported, however, that matters are progressing harmoniously, and that all differences may be soon adjusted. The next meeting is to be held in New York on September 11 at the office of Perkins, Goodwin & Co.

An event of local importance was the midsummer reunion of the Boston Paper Trade Association, which took place on Friday of last week.

The tug Juno carried the party to Marblehead Neck, and the hour of departure was set at high noon. After waiting fifteen minutes, Secretary Forsyth ordered the gangplank aboard and then the tug steamed off down the harbor. Colonel Train and his guest, James Tanner, from New York, took a position on the bow watch. On the after deck was located an Italian orchestra, around which a number of the excursionists gathered, while others found places on the hurricane deck, and a few, of sporting propensities, took charge of the captain's stateroom; nor did they leave that room until the tug reached the Eastern Yacht Club pier at Marblehead Neck, when the matches were properly disposed of and everybody went ashore.

At the club house everything was in readiness, and after a round of sherry and bitters to get the salt air out of the mouth the party was ushered into the spacious dining room, and lined up around the table.

The Hon. Wellington Smith, of Lee, Mass., was given the head of the table, and he presided with charming grace.

Others present were A. N. Burbank, A. C. Moore and William A. Hall, of Bellows Falls, Vt.; Warren F. Daniel, of Franklin, N. H.; Orin Robertson, of Hinsdale, N. H.; M. L. Bassett, of Lowell, Mass.; James Tanner, of New York, and these of Boston: Col. S. P. Train, James B. Forsyth, E. H. Stone, Jas. F. Dorsey, Col. J. P. Jordan, Wm. M. Jordan, Frank P. Carpenter, Geo. W. Bartlett, C. L. Baird, John E. Hall, H. T. Rockwell, W. F. Smart, Charles D. Brown, George W. Russell, H. W. Huguley, Clarence S. Whitney, John H. Eddy, J. F. Holt, E. W. Teale, J. D. Crosby, Lewis H. Bailey, George C. Andrews, Charles F. Shirley, Charles J. Wells, Adna T. Denison and A. L. Delesdernier.

The dinner was well served, and was thoroughly enjoyed. Everything was informal, as the "boys" were out for a jolly good time. Music by a Hungarian orchestra added a little to the noise from the lower end of the table, where a game of "odd or even" was carried on between courses.

After dinner the excursionists looked over the club house and its handsome grounds, but those conversant with the attractions of the captain's stateroom hurried back to the tug, and while the game was going on the tug steamed away on her return to Boston. Not until the next day did those aboard know that several of the party had been left behind, so interested were they in the game going on in the captain's stateroom. In explanation thereof the captain of the tug stated that somebody called out "All aboard!" The gentlemen left behind were at the yacht club house finishing up one last cold bottle, and did not hear the shout of "All aboard!" They came to town later by train, madder than wet hens. All has since been forgiven, and they hope to enjoy another outing next summer.

Concerning business there is not much to report, this week, nor is much local trade looked for during the coming week, owing to the disturbed condition of city traffic due to the Knights Templar Conclave. On Saturday the visiting knights will begin to arrive; on Tuesday the big street parade will take place and the remainder of the week will be given to one continual round of pleasure. The city will be overcrowded with strangers all the week, so that out of town paper makers intending to visit Boston had better telegraph ahead for a room. Hotel accommodations are all sold up.

Business will be almost entirely suspended on Tuesday; the banks, the post office, the stock exchange, the City Hall and the State House will close. Paper houses will also be closed, as by general consent Tuesday will be a holiday.

Trade visitors this week have not been very numerous, those reported besides those heretofore mentioned being ex-Governor Cheney, of Manchester, N. H.; Eugene F. Daniel, of Franklin, N. H.; W. A. Whitney, of Sunapee, N. H.; William M. Kimball, of Mittineaque, Mass.; H. M. Stratton, Mr. Fish, A. H. Hill, George N. Tyner and S. R. Whiting, of Holyoke, Mass.; Mr. Leeds, of Westfield, Mass.; C. S. Mayo, of Lawrence, Mass.; Fred Temple, of Pepperell, Mass.; E. C. Kahre, of Philadelphia.

Edward A. Burr, paper mill architect, has designed some changes and improvements for F. W. Bird & Son at Walpole, Mass. Foundations are being put in for a new beater room to be 75x110 feet. A new cutting room, 40x100 feet, and a steam engine room 38x60 feet, are also to be built.

Under date of August 15 Secretary of State Olin announces that His Excellency the Governor, with the advice and consent of the Council, has this day appointed Augustine W. Esleeck, of Holyoke, a member of the board of trustees of the Massachusetts Hospital for Consumptives and Tubercular Patients. A better selection could not have been made, and Mr. Esleeck has the best wishes of his many Boston friends.

Col. E. H. Haskell, who, with his wife and two daughters, has been doing Europe for several weeks, returned to Boston this week. The colonel looks much refreshed for his recreation, and evidently enjoyed his travels abroad.

DELESDERNIER.

Supplies — Smithsonian Institution, Etc.

Awards for supplies of paper for the Smithsonian Institution, National Museum, Bureau of International Exchange, National Zoological Park and Bureau of Ethnology for current fiscal year are as follows:

5 rms paper, blotting, Capital, $6.15, $9.50, Easton & Rupp.

3 rms do book, $3, R. Carter Ballantyne.

5 rms do tissue manilla, 75c, R. Carter Ballantyne.

400 rolls do No. 1, Pyramid Oval, toilet, 8c, John C. Parker.

10 rms do typewriter, thin, letter size, white, $1.50, I. Clark Seamans, New York city.

10 rms do cap size, $1.80, do.

15 rms do letter size, 12 lbs, $3.36, do.

5 rms do cap size, white, 14 lbs. Carew's, No 305, $1,22, $2.04 and $4.08, R. Carter Ballantyne.

80 rms do linen ledger, 7 lbs to ream, Brown's, $1.35 and $1.68, I. Clark Seamans, New York city.

3 rms do wrapping, rope manilla, 40x48 in, $10.50, R. Carter Ballantyne.

6 rms do 36x40 in, 90 lbs, $6.25, do.

8 rms do 24x36 in, $4 25, do.

6 rms do 18x24 in, $3, do.

3 rms do 36x40 in, 40 lbs, $2.50, do.

20 rolls do manilla, roll, 18 in, 60 lbs, 4½c per lb, do.

2 rolls do, 40 in 5c per lb, do.

300 lbs twine, cotton, 9¾c., Shoemaker & Busch, Philadelphia, Pa.

200 lbs twine, hemp, 9¾c, do.

WASTE PAPER, ETC.

12,000 lbs mixed paper, 15-100c, E. G. Wheeler, trustee.

Supplies—Department of the Interior.

Following are awards of contracts for paper:

28,500 sheets binders' board, ea, 3,00 sheets 8x11½ in, 58¼c per 100; b, 10,000 sheets 9¾x12 in, 70c per 100; c, 7,500 sheets 8x14 in, 69c per 100; d, 7 500 sheets 12½x18 in, $1 31½ per 100; e, 500 sheets 19x22 in, $2 57½ per 100.

20 bundles strawboard, 17¼x21 in, 90c.

40 rolls paragon drawing paper, $4.50 and $5.12.

650 sheets waxed stencil paper, 4½c.

5 boxes transfer paper, plain, $25.

100 rms manilla board, 22x38 in, $5 30 and $6.58.

600 rms lithographic printing paper, $2.88.

42 rms photographic transfer paper, a, 12 rms Clemons, 18x22 in, $22; b, 12 rms albumen, N. P. A., 18x22 in, $36; c, 6 rms helio, 22x28 in, $16 98; d, 12 rms helio, 24x34 in, $26 23.

500 rms map paper, pure white, uncoated, a, 400 rms 19x22 in, $4.40; b, 100 rms 22x38 in, $8.80.

1,000 rms do coated, a, 600 rms 19x22 in, $5.20; b, 400 rms 22x38 in, $10.40.

12,000 pasteboard tubes, a, 4,000, 19x1½ in, 95c per 100; b, 4,000 38x3 in, $3 per 100; c, 4,000, 38x2 in, $2.75 per 100.

190 packages drawing paper, 8x10 in, 24c.

Supplies — Post Office Department.

Awards for supplies for the Post Office Department and Postal Service for fiscal year ending June 30, 1896, have been made as follows: All bidders are resident in Washington unless otherwise stated.

300 rms foolscap, white, 16 lbs to rm, $1.06, Carter, Rice & Co., Boston, Mass.

300 rms legal cap, white, 16 lbs to rm, $1.04, do.

200 rms quarto demy, 5 lbs to rm, 55c, C. M. Stoever, Philadelphia, Pa.

150 rms demy white paper, 24 lbs to rm, $1.32, Connecticut River Paper Co., Holyoke, Mass.

50 rms demy, 28 lbs, $1.83; 200 rms double demy, 30 lbs, $3.66, C. M. Stoever, Philadelphia, Pa.

50 rms linen note, 6 lbs, 60c, Valley Paper Co., Holyoke, Mass.

100 rms half medium, white, 16 lbs, 88c; 150 rms medium, 30 lbs, $1.65, Carter, Rice & Co, Boston, Mass.

Imperial, 72 lbs, $9.36 per rm, do.

10 rms flat cap, 18 lbs, $1.44, do.

White bond, 24 lbs, .0055c per sheet, John M. Henkle.

a, 100 rms rag print, 20 lbs, 60c, bidder 5; b, 800 rms do 25 lbs, 82c, C. M. Stoever, Philadelphia, Pa.

a, 450 rms card blotter, 100 lbs, $6.23; b, 20 rms do 120 lbs, $7.47, do.

5,000 sheets cardboard, .024c, Carter, Rice & Co., Boston, Mass.

a, 1,000 doz scratch blocks, 4½x8 in, 17c; b, 100 doz do 4½x6 in, 13c, New York and Pennsylvania Co., New York city.

5,000 slide labels, 33c per M, Easton & Rupp.

400,000 examination cards, .349c per M, John C. Parker.

50 rms 14x17 white flat cap, 5c per lb, R. Carter Ballantyne.

500 rms 17x22 white flat folio, .055c per lb, C. M. Stoever, Philadelphia, Pa.

10,000 sheets, 22x28 3-ply Bristol cardboard, .0096c per sheet, do.

15,000 sheets 22x28 4-ply white Bristol cardboard, .014c per sheet, do.

8,000 sheets 22x28 6-ply white blank cardboard, .015c per sheet, R. Carter Ballantyne.

1,000 sheets 22x28 6-ply railroad cardboard, .025c per sheet, Carter, Rice & Co., Boston, Mass.

100 rms 24x38 No 1 machine flat book paper, .04½c per lb, John C. Parker.

20 rms 26x40 do, .04½c per lb, do.

10,000 strawboard mailing tubes, $8 per M, W. A. Wheeler, New York city.

200,000,000 printed facing slips, .02c per M, Morrill Brothers, Fulton, N. Y.

200,000 card slide labels, per lot of 50, .04c; per lot of 100, .05c; per lot of 200, .06c; per lot of 300, .07c; per lot of 400, .08c; per lot of 500, .09c, do.

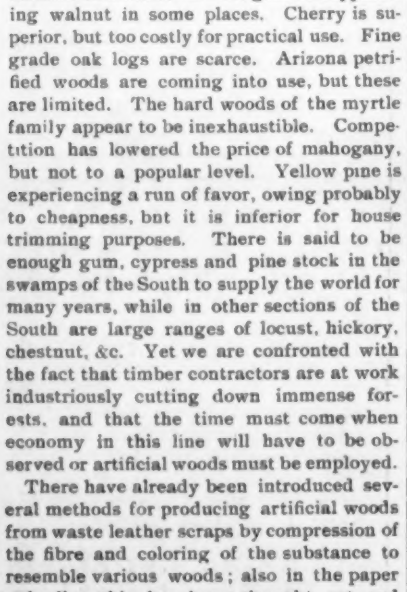
New Inventions—LXXXVII.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Geo. Damon Rice.

American forests supply many varieties of beautiful and substantial woods for numerous uses. Some kinds have become scarce of late years, owing to the large consumption. The white cedar, sycamore, California redwood and some other varieties are plentiful, while the walnut is in limited supply. Common beach is cheap and abundant. Cypress is in liberal supply, but is objectionable owing to its color. American birch is rapidly finding popularity as an interior decorator. Sweet gum is supplanting walnut in some places. Cherry is superior, but too costly for practical use. Fine grade oak logs are scarce. Arizona petrified woods are coming into use, but these are limited. The hard woods of the myrtle family appear to be inexhaustible. Competition has lowered the price of mahogany, but not to a popular level. Yellow pine is experiencing a run of favor, owing probably to cheapness, bnt it is inferior for house trimming purposes. There is said to be enough gum, cypress and pine stock in the swamps of the South to supply the world for many years, while in other sections of the South are large ranges of locust, hickory, chestnut, &c. Yet we are confronted with the fact that timber contractors are at work industriously cutting down immense forests, and that the time must come when economy in this line will have to be observed or artificial woods must be employed.

There have already been introduced several methods for producing artificial woods from waste leather scraps by compression of the fibre and coloring of the substance to resemble various woods; also in the paper pulp line this has been thought out and practiced, with the result that at the present moment we have records of some three or four distinct processes which have proved successful in making correct imitations of walnut, mahogany, cherry, &c., from wood or rag pulp stock. The latest feature in this line is the invention of a method for producing stock for use in making spools, bobbins, tool handles, cycle bar handles and buttons, each of which requires a different grade of material, because as made now different woods are used for each. Inferior woods are good enough for spools, while close grained woods must be used for tool handles. The five distinct varieties of woods utilized in manufacturing the five named articles are all more or less scarce and are becoming scarcer as years go by,



Machine for Turning Spools, etc., from Wood Pulp.

for the great cotton, linen and thread mills of the country annually consume spools and bobbins which require millions of feet of lumber to make. Wooden buttons also use much material, the consumption being so great that manufacturers no longer depend upon waste wood for this purpose, but manufacture from logs.

In treating the compressed pulp stock from which the articles are made, the process is as follows: The pulp, procured either from wood, rags, straw or jute stock, is saturated with hot paraffin wax of 146° melting point, and a paste made as follows is added: Five ounces glue, 10 ounces cold water, 3 pounds hot water, 18 ounces starch, 12 ounces carbolic acid. Fifty pounds of pulp are treated. A mixing follows; then there are put in several ounces of rosin, some borax, litharge, degras and dissolved printers' roller composition. Another mixing, followed by drying and compressing of the pulp, and the tough, durable and elastic stock, not quite so hard as wood, yet firmer and as lasting, is turned down to proper conditions on a specially contrived automatic pattern wood turning device, a view of which is given, and in which A is the piece of stock which is being turned, B the pattern governor, C the beveled gear connections, D, D, the connecting gears, and E the turning tool. The shapes of the article to be turned are reproduced exactly on the piece A by means of the governing lever G, one end of which follows every curve, rise and fall in the mold B, is lowered or raised, transposing the movement to the shaft H, and this in turn operates the frame piece F, to which is attached the tool cutter E, so that any movement is directly felt and patterns are duplicated to a hair's breadth.

The device is run by the belt I. Some of the special articles made are shown in the diagram, K being a spool, L a bobbin, M a tool, N a handle for a bicycle bar and O a button. There being no grain in articles made from pulp, splitting and splintering are avoided. Lightness, durability, smoothness and reduced cost are among some of the special points of interest in this process of procuring stable articles from artificial wood.

A lubricator with a downward drop feed will work heavy oil when cold better than any other kind.

To get a little more hug to bolts take off one of the nuts, wipe the stud off thoroughly, clean out the threads of both stud and nut, oil liberally, and replace, setting up as hard as can be done safely. Repeat the process with the other nuts, loosening but one at a time, and you will probably tighten the joint enough to stop an ordinary leak.—*Power*.

Black Lacquer for Brass and Steel.

The process of lacquering or japanning frequently adopted in machine shops is to give the articles made of brass, steel or iron a coat of black Japan varnish made specially for the purpose, and then placing the articles in an oven and allowing them to dry in a temperature of 250 to 300° Fahr., or higher. By this process the articles will have a uniform glossy surface, which is retained on cooling. Metals can also be given a lustrous black as follows: The bottom of a cylindrical pot, which should be about 18 inches in height, is covered half an inch with powdered bituminous coal; a grate is then put in and the pot filled with the articles to be varnished.

Articles of cast iron, iron wire, brass, zinc, steel, &c., may be subjected to the same treatment. The cover is then put on and the pot heated over a coke fire under a well drawing chimney. In the beginning the moisture only evaporates, but soon the coking commences, and deep brown vapors escape, which irritate the throat. When the bottom of the pot has been heated for fifteen minutes to a dull red heat the coal has been mostly converted into coke; the pot is then removed from the fire, and, after standing for ten minutes opened for evaporation, all the articles will then be covered with a thin, lustrous coating which cannot be easily scratched. This lacquer is not only a protection against oxidation of metals, but will stand also a considerable heat, only disappearing at beginning of redness. White grounds are obtained with greater difficulty, and we do not know of a white lacquer which will give satisfactory results.—*American Machinist*.

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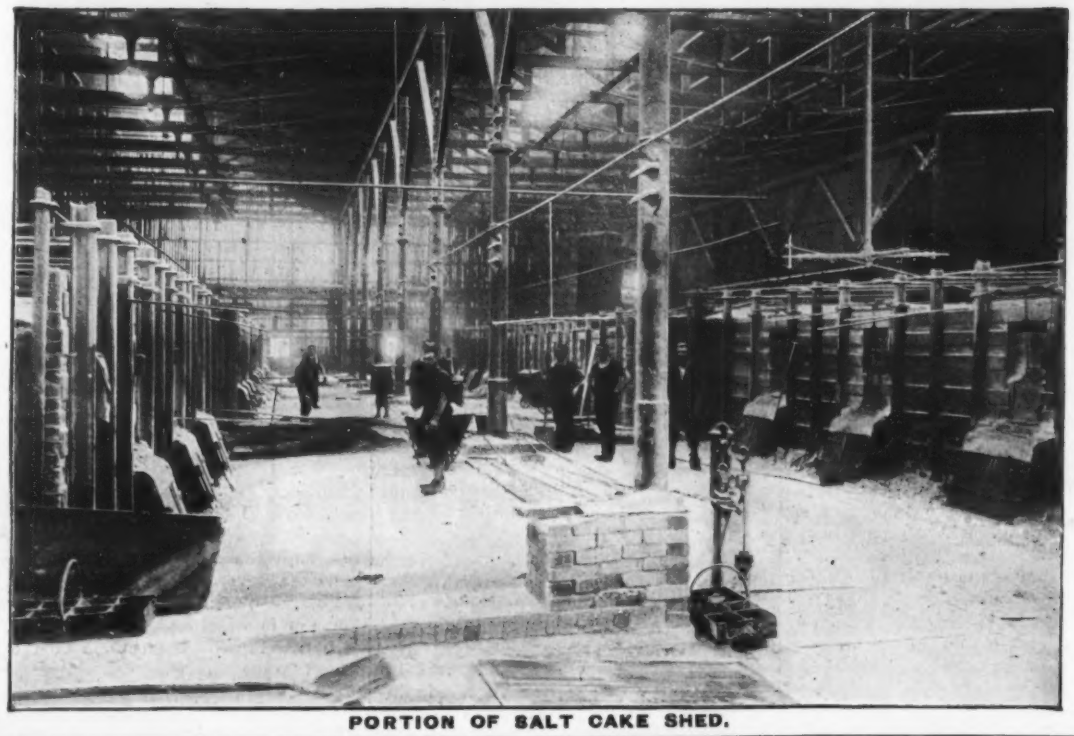

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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED AUGUST 16, 1895.

An. Colors..	599	$42,366	Paper.....	529	$25,851
Alum.....	43	133	Steel Pens..	11	5,869
Alum's Cake	—	—	Stationery.	25	1,127
Bl. Powders	427	7,899	SlatePencils	416	2,444
Soda Ash...	2,250	4,009	Clay.....	—	4,880
Soda, Caus.	270	3,177	J'te B'ts,&c.	—	—
Soda, Sal....	500	1,216	P.Hangings	237	1,660
Soda, Hypo.	—	—	Pap'r Stock	2,686	32,340
Ultramarine	13	405	TerraAlba.	769	1,135
Books.....	439	39,462	Waste.....	207	12,834
Newspapers	266	7,239	Wood Pulp	1,000	6,794
Engravings.	51	14,667			
Ink.....	6	253			
Lead Pencils	11	2,183	Totals...	11,715	217,943

Imports General Merchandise for the week ended August 16, 1895..... $8,207,917

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO AUGUST 21, 1895.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	685	....	....	....	....
Antwerp.....	2,976	5	1,082	....	12,024
Bordeaux.....	1,029	....	....	....	850
Bremen.....	2,615	725	49	....	2,867
Bristol.....	....	...	....	....	2,657
Buenos Ayres.	520	....	....	....	....
Calcutta.....	....	...	....	....	5,838
Cen. America.	180	....	....	....	....
Christiania....	....	....	85	....	....
Copenhagen..	...	....	125	....	1,581
Dundee.....	....	....	1	....	708
Fiume.....	....	....	34	....	....
Geestemunde.	412	....	....	....	537
Genoa.....	998	....	....	....	3,568
Ghent.....	90	40	....	....	395
Glasgow.....	146	53	....	....	78
Hamburg.....	4,394	279	1,553	....	2,801
Havre.....	....	....	....	....	1,063
Hiogo.....	6,544	....	....	....	....
Hull.....	5,086	40	2,091	....	8,010
Kobe.....	11,578	....	....	....	....
Leghorn.....	1,858	....	....	....	185
Liverpool.....	770	195	....	....	13,021
London.....	5,870	1,456	....	....	7,375
Marseilles....	155	....	30	....	2,197
Newcastle....	....	221	....	....	2,454
Rosario.....	....	....	....	....	98
Rotterdam....	2,187	....	67	....	2,564
Stettin.....	907	....	136	....	1,902
Trieste.....	123	....	45	....	....

NEW YORK IMPORTS.

FROM AUGUST 14 TO AUGUST 21, 1895.

Paper Stock.

G. W. Sheldon & Co., Westernland, Antwerp, 53 tons chemical fibre.

Oelrichs & Co., Stuttgart, Bremen, 13 bs. manillas.

J. W. Mason & Co., Kansas City, Bristol, 66 bs. manillas.

J. W. Mason & Co., Jersey City, Bristol, 278 bs. manillas.

F. Bertuch & Co., Patria, Hamburg, 25 tons chemical fibre.

E. Hatton & Co., by same, 130 bs. rags.

Train, Smith & Co., by same, 191 bs. bagging.

G. Hamilton, Mab, Hamburg, 50 tons chemical fibre.

Schulz & Ruckgaber, Galileo, Hull, 336 bs. bagging.

J. H. Hagemeyer, by same, 35 bs. rags.

R. F. Downing & Co., by same, 300 bs. cotton waste.

J. W. Mason & Co., by same, 134 bs. manillas.

Castle & Gottheil, Italia, Leghorn, 250 bs. rags.

Train, Smith & Co., Nomadic, Liverpool, 162 bs. bagging.

John H. Lyon & Co., Mohawk, London, 161 bs. rags.

R. H. Overton & Son, by same, 110 bs. rags.

Horace Dutton & Co., by same, 71 bs. manillas.

Schulz & Ruckgaber, America, London, 116 bs. rags.

C. F. Donner, Greece, London, 31 bs. rags.

J. W. Mason & Co., Mobile, London, 173 bs. manillas.

Jessup & Moore Paper Company, Ensenada, Marseilles, 600 bs. bagging.

Train, Smith & Co., Maasdam, Rotterdam, 14 bs. rags.

Train, Smith & Co., Werkendam, Rotterdam, 88 bs. rags.

Paper.

O. F. Melvin, Westernland, Antwerp, 2 cs.

F. W. Devoe & C. T. Raynolds Company, by same, 11 cs.

L. C. Wagner, by same, 14 cs.

Kupfer Brothers, by same, 11 cs.

Merchants' Dispatch, by same, 46 cs.

W. Seyd, by same, 11 cs.

J. B. Vandergrift, by same, 5 cs.

C. S. Abbott, by same, 60 cs.

G. W. Sheldon & Co., by same, 48 cs.

Photo Material Company, by same, 4 cs.

Eastman Kodak Company, by same, 7 cs.

Brown, Palmer & Co., by same, 7 cs.

E. & H. T. Anthony & Co., Majestic, Liverpool, 1 cs.

G. Gennert, Chateau Lafitte, Bordeaux, 2 cs.

O. G. Hempstead & Co., Patria, Hamburg, 5 cs.

Kupfer Brothers, by same, 6 cs.

Engel & Epstein, by same, 4 cs.

L. DeJonge & Co., by same, 16 cs.

R. F. Downing & Co., by same, 3 cs.

L. De Jonge & Co., Bohemia, Hamburg, 23 cs.

R. F. Downing & Co., by same, 12 cs.

Marcus Ward & Co., Galileo, Hull, 4 cs.

John Hunter, by same, 9 cs.

Continental Match Company, Wittekind, Bremen, 9 cs.

Lieverato Brothers, Kaiser Wilhelm II., Genoa, 1 cs.

M. Adler, Obdam, Rotterdam, 28 bs.

BOSTON IMPORTS.

FROM AUGUST 15 TO AUGUST 21, 1895, INCLUSIVE.

Paper, &c.

Wm. H. Guild & Co., Pavonia Liverpool, 5 bs. periodicals.

W. H. Proctor & Co., by same, 8 cs. paper.

J. Dickinson & Co., Europe, London, 26 cs. paper.

Potter Drug and Chemical Company, by same, 3 bs. printed circulars.

Paper Stock.

Train, Smith & Co., Europe, London, 257 bs. rags, 31 bs. manillas, 137 bs. waste paper.

Wheelwright Paper Company, by same, 71 bs. waste paper.

Horace Dutton & Co., by same, 125 bs. waste paper.

E. P. True, by same, 53 bs. waste paper.

Atterbury Brothers, by same, 56 bs. waste paper.

Crocker, Burbank & Co., by same, 124 bs. waste paper.

C. A. Cheney, Ottoman, Liverpool, 56 coils manillas.

R. H. Overton & Son, by same, 207 bs. manillas.

Train, Smith & Co., Belgian King, Antwerp, 310 bs. flax waste.

C. A. Cheney, by same, 131 bs. manillas.

Train, Smith & Co., Galileo, Hull, 245 bs. rags.

S. D. Warren & Co., by same, 222 bs. rags.

C. A. Cheney, by same, 35 bs. manillas.

W. F. Corne, by same, 11 bs. rags.

Crocker, Burbank & Co., by same, 86 bs. waste paper.

J. B. Moors & Co., by same, 256 bs. manillas.

Train, Smith & Co., Columbian, Liverpool, 98 bs. rags.

C. A. Cheney, by same, 58 bs. rags.

J. B. Moors & Co., by same, 185 bs. waste paper.

Wood Fibre.

R. Helwig, Belgian King, Antwerp, 810 bs.

Morey & Co., Galileo, Hull, 406 bs.

Stone & Downer, by same, 340 bs.

Order, by same, 800 bs.

Page, Newell & Co., by same, 221 bs.

Sizing.

C. A. Cheney, Ottoman, Liverpool, 238 bags.

J. W. Barlow, by same, 30 bs.

E. W. McClintock, Pavonia, Liverpool, 157 bags.

Thomas Groom & Co., by same, 144 bags.

C. A. Cheney, Columbian, Liverpool, 91 bags.

Bleaching Powder.

J. L. & D. S. Riker, Ottoman, Liverpool, 496 cks.

A. Klipstein & Co., Belgian King, Antwerp, 38 cks.

Bowman, Thompson & Co., Columbian, Liverpool, 95 cks.

Caustic Soda.

James Lee & Co., Ottoman, Liverpool, 50 drums.

J. L. & D. S. Riker, by same, 100 drums.

Edward Hill's Sons & Co., Columbian, Liverpool, 250 drums.

Soda Ash.

Wing & Evans, Pavonia, Liverpool, 200 bags.

Wing & Evans, Ottoman, Liverpool, 32 cks. and 80 bags.

Warren & Co., by same, 73 cks. and 182 bags.

Morey & Co., Columbian, Liverpool, 43 cks.

Wing & Evans, by same, 65 cks. and 800 bags.

Refined Alkali.

J. L. & D. S. Riker, Ottoman, Liverpool, 90 cks.

Soda Crystals.

Warren & Co., Ottoman, Liverpool, 280 bbls.

Crude Sulphur.

Linder & Meyer, Columbian, Liverpool, 1,670 bags.

Pulp Stones.

Lombard & Co., Columbian, Liverpool, 90 stones.

Lombard & Co., Galileo, Hull, 28 stones.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED AUGUST 17, 1895.

Paper.

S. Hartung & Co., Tabasco, Hamburg, 20 cs.

Chas. Beck Paper Company, by same, 1 cs.

Order, Maryland, London, 83 cs.

F. Weber & Co., Indiana, Liverpool, 14 cs.

A. Shoemaker, Pennsylvania, Antwerp, 6 cs.

A. Hartung & Co., by same, 2 cs.

Slade, Hipp & Meloy, by same, 2 cs.

Paper Stock.

Jessup & Moore Paper Company, Carthaginian, Glasgow, 140 bs. waste paper.

Heidelbach, Ickleheimer & Co., by same, 50 bs. bagging.

Order, by same, 261 bs. bagging.

J. Risdale Company, by same, 48 bs. rags.

Soda Ash.

Order, Carthaginian, Glasgow, 25 cks.

Brown Brothers & Co., Indiana, Liverpool, 70 tcs.

Order, by same, 60 cks. and 96 tcs.

Caustic Soda.

E. Hill's Sons & Co., Montana, London, 50 drums.

Same, Carthaginian, Glasgow, 425 drums.

Soda Crystals.

Order, Indiana, Liverpool, 84 cks.

Bleaching Powder.

Order, Indiana, Liverpool, 30 cks.

Bichromate of Potash.

J. L. & D. S. Riker, Carthaginian, Glasgow, 30 cks.

China Clay.

Order, Carthaginian, Glasgow, 100 cks.

J. B. Moors & Co., by same, 60 cks. and 120 bags.

EXPORTS of Paper, &c., from New York for the Week Ended August 20, 1895.

BOOKS, to Antwerp, 2 cs.; Asia, 2 cs.; British East Indies, 26 cs.; British Australasia, 5 cs.; Bremen, 6 cs.; Chili, 5 cs.; British possessions in Africa, 33 cs.; China, 6 cs.; British West Indies, 23 cs.; Hamburg, 2 cs.; London, 16 cs.; Liverpool, 7 cs.; Newfoundland, 8 pkgs.; Siam, 1 cs.; Southampton, 50 pkgs.; Colombia, 2 pkgs.

PAPER, to Newfoundland, 1 pkg.; San Domingo, 122 pkgs.; Antwerp, 6 cs.; Argentine Republic, 4 cs.; Brasil, 1 pkg.; British Australasia, 100 pkgs.; Bristol, 17 cs.; Hamburg, 4 cs.; British possessions in Africa, 5 cs.; Cuba, 458 pkgs.; British West Indies, 274 pkgs., 30 rms.; Ecuador, 110 pkgs.; British Honduras, 18 pkgs.; Copenhagen, 1 cs.; Hayti, 25 pkgs.; Central America, 7 pkgs.; London, 677 pkgs.; Peru, 6 pkgs.; Liverpool, 4 cs.; Mexico, 183 pkgs.; Venezuela, 2 pkgs.

STATIONERY, to Amsterdam, 1 cs.; Asia, 3 cs.; Bremen, 1 cs.; British possessions in Africa, 1 cs.; British Honduras, 4 cs.; British West Indies, 17 cs.; Central America, 48 cs.; China, 2 cs.; Cuba, 1 cs.; Copenhagen, 1 cs.; Hayti, 4 cs.; Ecuador, 2 cs.; Hamburg, 9 cs.; Havre, 1 cs.; London, 751 cs.; Mexico, 13 cs.; Newfoundland, 3 pkgs.; New Zealand, 1 cs.; Peru, 1 cs.; San Domingo, 6 cs.; Colombia, 12 cs.; Venezuela, 4 cs.

SANDPAPER, to Argentine Republic, 33 cs.; British West Indies, 2 pkgs.; Central America, 4 bdls.; Copenhagen, 16 bdls.; Hayti, 2 bdls.; London, 54 bs.; Mexico, 7 bs.; San Domingo, 1 cs.

TWINE, to Argentine Republic, 5 cs.; Central America, 4 bs.; British West Indies, 5 bs.; Liverpool, 1,344 bags; British Honduras, 1 bale; Mexico, 2 bs.; Colombia, 1 bdl.

TAGS, cases, to Amsterdam, 1; Central America, 10; Hull, 3; Mexico, 1.

LABELS, cases, to British West Indies, 3; Central America, 1; San Domingo, 1.

NEWSPAPERS, bales, to Leipsic, 2.

STRAWBOARD, packages, to London, 177.

CARDS, cases, to British West Indies, 1; Cuba, 10.

PAPER BOXES, cases, to British possessions in Africa, 5.

RAGS, bales, to Hamburg, 2.

AGGREGATES AND VALUES.

Wood Pulp, bdls.....	—	—
Wood Pulp, rolls.....	—	—
Cotton Waste, bs.....	—	—
Rags, bs.....	$2	$80
Paper, reams.....	—	—
Paper, pkgs.....	1,684	11,014
Paper, cases.....	75	1,942
Books, cases.....	194	10,372
Stationery, cases.....	996	18,128
Rosin, bbls.....	4,767	15,326
Totals.....	7,718	$56,862

Exports General Merchandise for the week ended August 20, 1895..... $5,223,765

PAPER MILL PAINT.

THE SECRET DISCOVERED.

"I've got it by gum, that paint never will peel, chalk or crack, that's sartin."

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Packers and Shippers of
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ENGINE CLEANING WASTES,
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Colored Jute Wastes. Bleached Jute Wastes,
Felting Wastes and Carded Jute Tows.
OFFICES:
CALCUTTA BUILDINGS.
WORKS:
COMMERCIAL COURT.
WAREHOUSES:
EXCHANGE STREET.
DUNDEE, Scotland.

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Paper Makers' Supplies,
24 FEDERAL STREET, BOSTON.
BRANCH OFFICES: 140 NASSAU STREET, NEW YORK. 14, 16, 18 & 20 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.,
WHOLESALE DEALERS IN AND PACKERS OF
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ALSO IMPORTERS AND DEALERS IN
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A. D. LITTLE, GRIFFIN & LITTLE, PAPER MILL CHEMIST,
Office and Laboratory: 103 Milk Street, Boston.
EXPERT IN THE SULPHITE PROCESS AND ALL CHEMICAL MATTERS PERTAINING TO THE MANUFACTURE OF PULP AND PAPER.

A. WERTHEIM & CO.,
HAMBURG, GERMANY,
Exporters of all Grades of Sulphite and Soda Pulps.
SIGMUND GOLDMAN, Agent for the United States and Canada,
BENNETT BUILDING, 99 NASSAU STREET, NEW YORK.

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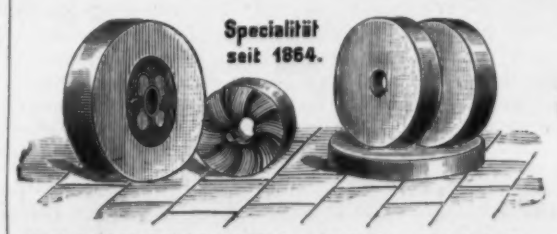

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London Office—ARTHUR MORRIS, General Manager, No. 1 MITRE COURT, FLEET STREET, LONDON, England.

NEW YORK: SATURDAY, AUGUST 24, 1895.

BETTER trade prospects in the United Kingdom are reported. This is well. When the wave of prosperity is felt there it is naturally reflected all over the world. We believe that our own manufacturing interests will experience the benefit of the returning tide of enlarged consumption and demand. Indeed this movement has already begun.

THE continual recurrence of destructive forest fires calls for more energetic measures than have hitherto been brought to bear on the subject. There can be no doubt that the larger number of these fires are the result of stupidity or carelessness, and their prevalence in summer seems to connect them with camping-out parties to some extent. It is said to be a fair estimate that such fires have destroyed more than a million dollars' worth of property in Michigan every year for forty years. Even heavier losses have been sustained in some years by other States, and every year the loss is more appalling, because our resources are dwindling and tracts of timber grow more valuable. In other countries, notably Germany, a great deal of attention is given to forestry, and heavy penalties are inflicted for wanton destruction, whether from carelessness or calculation. Here, however, our superabundant resources have engendered an improvidence and carelessness which should no longer be tolerated in any State. In New York and some other Eastern States a good beginning has been made in forestry, but the people themselves need to be more interested, and carelessness should be more severely dealt with.

IT is announced that the sulphite fibre manufacturers have perfected their organization. As it is understood that the terms of their agreement have not yet been defined, and that the plan for handling the product of the mills has not been formulated, there is yet much to be done before the combination can be regarded as assured. The construction of new mills and the prospective building of others will, it seems to us, seriously interfere with the project of uniting the sulphite fibre interest. Other considerations, also, are likely to intervene, and the question naturally comes up as to whether the new association will be able to accomplish much more than to preserve the form of organization. It is certainly possible, by free interchange of opinion and frank action, to maintain the fibre producing interest on a more settled basis. We hope that this may be done.

THE newspapers throughout the country have been getting up considerable of a scare because of the proposed consolidation of the news paper making mills. They are rather late in the day in announcing this information and getting worked up about it. The fact, however, has given them something to talk about—erroneously, if not otherwise. It has been assumed that the purpose of the news combination is to "put the screws" onto the consumers of news paper, large and small. There has been nothing yet to justify this opinion, and we doubt if there will be. If the newspaper publishers had made fewer exactions, and had treated the news manufacturers with that fairness which ought to obtain between parties dealing with each other in a business way, the combination might not, possibly, have been formed. The old maxim of "live and let live" should be practiced by the publishing trade as well as by the paper making trade.

WERE it not for the help of the New York Post Office the postal revenues of the country would suffer to an extent which would make the postal service anything but nearly self supporting. There is no city of the Union which can make an equal exhibit as to work performed and revenue derived from its post office as the city of New York. The annual balance sheet of this post office for the year ended June 30 shows that there were delivered through the lock boxes and by carriers 469,600,434 pieces of ordinary mail matter. In the registered letter department 1,482,226 pieces were delivered, and 1,596,421 of domestic and 894,703 of foreign origin were recorded and distributed to other offices. In the distribution department a total of 914,325,113 pieces was handled, and the total number of pieces of mail matter of all kinds handled was 1,387,898,897, a daily average of 3,802,468, an increase over the previous year of 51,673,130. The New York General Post Office issued and paid 2,139,894 money orders, amounting to $11,413,575.92. At the branch offices and sub-stations 485,478 money orders were issued and paid, amounting to $7,175,293 53. The aggregate business of the money order department for the year amounted to $97,020,077.30. The total receipts of the office were $7,254,984.85; the total expenditures, including free delivery, $2,972,126.96, giving a net revenue of $4,282,857.89. Truly, this is a good showing.

No trade or profession is so poor nowadays as to lack a literature devoted to its special interests, and a press devoted to the improvement of its technic and workers. There is nothing to be said in favor of class journalism which has not been said over and over again. The class or trade journal has passed the experimental stage and has become an essential factor in the conduct of a trade or a business—a fact which is cordially conceded by all sensible and successful men. Trade literature, aside from the trade press, is, however, apt to be overlooked as non-essential, a mistake altogether too common among both the actual workers and the no less necessary executive corps of a business. The history of any trade is a rich storehouse of experience from which at least moral strength can be drawn. To know what others have done, and wherein others have succeeded or failed, is always helpful, and the reader will also learn that what he is to-day, his skill, his opportunities and privileges are not as entirely of his own getting as they are the legacy of other men's strivings. This takes the conceit out of men to a wonderful degree, which is just as well for them in their relations toward each other. Then, too, this study of the literature of one's trade broadens the mind and encourages generosity, by showing how little independence there is in individual callings; how close is the affiliation between our own and many other trades. So far from narrowing the point of view and cultivating a Pharisaical pride, as many writers think it would, a study of trade history and cognate literature would be the surest means of preventing narrow-mindedness and trade bigotry, because it would show conclusively that the most prosperous trades draw the substance of their success from many sources, and depend upon the co-operation of many other trades in achieving that success. Sir Boyle Roche's amusing query: "What has posterity done for us?" is too often harbored seriously. To live for ourselves or our day alone is taking a mean view both of life and of ourselves. Only by knowing what others have done can we ourselves hope to gather force and influence enough to live, either in name or by our works, in the future.

Watermarks.

BY DANDY.

This story comes from Boston. A pulp dealer was talking to a friend whose knowledge of fibre making is very limited, as he is not in the trade. The talk turned on the poor quality of fibre made by the sulphite fibre maker, and in explanation the dealer remarked that it was owing to poor cooks. "Well, then," said the friend, "why doesn't he get a new chef?"

A New York paper man is partially color blind, a fact which explains why he came to business one morning this week with a pink shirt and a blue collar. It is not stated whether he thought that the shirt was blue or the collar pink, but, all the same, color blindness is a tip-top thing in its way.

Now the sulphite men propose to have a central selling agency. That is one way to prevent the abnormal cutting of prices, and if it becomes a thing of life it ought to spread a deal of happiness in sulphite circles.

The sulphite manufacturers, I take it, are profiting by the experience of the soda fibre men and are steering clear of the rocks which wrecked the organization of the latter trade.

Writing to an Eastern friend as to the situation of affairs in Appleton, a manufacturer says: "We are down flat and have been for three weeks. There is not enough water coming down the river to run one machine, and the prospects are just now that there will be no change unless rain comes to our relief. You would be surprised to see Appleton to-day. Every mill in the valley is almost deserted, and all because the Oshkosh lumbermen want to dam enough water back in the Wolf River to float down some logs which have been on its banks for two years."

"General Doe, Assistant Secretary of War, was here two weeks ago and took in the situation, and it was the belief of all interested that he would afford some relief; but I am sorry to say that the pull the other way was too strong for us, and I suppose we must grin and bear it until the fall rains come to our assistance."

"It seems very strange that we get no rain here. There have been storms around us, but none here; and as we had very little snow last winter and no spring rains, the lake has been very low all summer. All of the mills are now preparing to put in steam plants."

"Everything here looks bleak and dismal, so many men are out of work. It is only a short time ago that we all prided ourselves on the prosperity of Appleton during the dull times elsewhere, but we have got it now, right in the neck, and all because Oshkosh wants a few old boats to run up and down from there to Green Bay. I feel sure that this will be a profitable lesson to all mill men not to waste the water in the lake in future, but to hold back all that is not wanted for the use of the mills."

That picture is painted in rather dark colors, and it is to be hoped that matters will work around all right.

The Triennial Conclave of Knights Templar is to be held in Boston next week. There is to be a very goodly representation of the paper trade from various parts of the country. Many of the boys are in training for the event, some of them developing an abnormal thirst, and others engaging in signing pledges.

Trade Talks.

Thomas P. Vernon, with Richard R. Vernon, New York—I do not know whether business is good or not, as a general thing, but we find trade in tissue paper very fair. If we may judge of how business is from the reports as to the increase of wages in certain directions, I should say that it is better than it was, but it is a question as to whether such reports are correct in the first place, and—if they are correct—whether they mean anything in the second place. As I understand it, when the hard times came on several years ago, wages were reduced about 10 per cent., and such salaries as have been increased have been to the extent of 10 per cent., so that it only amounts to putting the wages back to where they were originally. Now, as a usual thing, a business man does not increase the wages of his employees unless he can afford to do so. On the other hand, he should not if he can avoid it cut their wages down. I do not think that, provided wages were reduced because business was bad, employers can afford to now increase or restore them because of the return of the former volume of prosperity. I am rather inclined to the belief that the 10 per cent. increase, if true, has been due, as is often the case, to the fact that business men increase the wages in order to keep the men quiet, or that having good men they prefer to pay them an advance rather than to let them go, as when things do pick up they will want good men, and sometimes good men are hard to get just when you want them. It is cheaper to pay them more now, and so have them ready when they are wanted. Another reason, which may have had some force in these stories of the restoration of wages, is on account of the labor or trades unions, which, composed of a combination of certain classes of the labor element, force employers to increase the scale of wages, or threaten to themselves go out on a "strike." While I believe that the laboring men have a perfect right to combine for the protection of their interests, I think that too much is said by them against capital, with which they have, of course, equal rights. While they have had so much to say about injustice, I have no doubt that much of it has been due to the agitation of their leaders. They complain and declaim against the laws and assert that these favor the rich man, and when they break the laws, as in the case of Debs, and are punished by being sent to jail, then they complain that the laws are not right. To get back to business, I doubt if it is any better. Prices are very low, although demand may have improved somewhat; but there are lots of people in the paper trade who would like to and can do more business than they are doing.

Changes, Removals and New Firms.

The *Herald*, Pottstown, Pa., is a new paper.

The *Egg Reporter*, Waterloo, Ia., is a new journal.

Ad. Rucker has opened a stationery store at Aspen, Col.

J. W. Brackett, publisher, Sebastopol, Cal., has sold out.

The *Daily Sun*, Little Falls, N. Y., has suspended publication.

Gus Bolander has opened a book and stationery store at Rockford, Ill.

The *Republican*, Kenton, Ohio, has been purchased by Gen. J. C. Howe.

J. F. Bullis, publisher, Davis, S. Dak., has been succeeded by F. F. Hanaford.

The *Express*, Chickasha, Ind. Ter., is a new paper, published by Rose & Farr.

E. J. Luther, printer, West Duluth, Minn., has removed his plant to Duluth.

Cribb & Hicks, dealers in wall paper, &c., Chicago, Ill., have dissolved partnership.

The *News*, Roachdale, Ind., has been purchased by L. A. Dobson and Homer A. Benson.

Porter & Coates, booksellers and publishers, Philadelphia, Pa., have dissolved partnership, Robert Porter retiring. The business will hereafter be conducted by Henry T. Coates under the style of Henry T. Coates & Co.

Fred. Knell, bookseller, stationer, &c., Perry, Ia., has sold out to A. W. McPherson.

Moor & Durbin, publishers, Redlands, Cal., have been succeeded by the *Facts* Publishing Company.

The *Rebuke*, Chattanooga, Tenn., is a new religious and reform magazine published by T. P. Jarnagin.

The plant of the *Times*, Yale, Ia., has been removed to Bagley, where it will be published as the *Criterion*.

The *Tribune*, Junction City, Kan., has been purchased by Judge A. C. Pattee, who will assume its management.

Hammar & Hoidale, publishers, Madison, Minn., have dissolved partnership. J. T. Hammer will continue the business.

The *Press*, Freeland, Pa., is a new weekly paper published by the *Press* Printing Company, and edited by H. L. Edmunds.

The *Colonial Magazine*, New York city, is a new monthly published in the interest of the patriotic organizations of America.

Pueblo, Col., has a new weekly paper called the *Saturday Mail*, managed and edited respectively by Paul Wilson and Webb M. Oungst.

New York has a new weekly paper called *Information*, which is published by the Transatlantic Publishing Company. It is a cyclopedia of current events.

The *Telephone* Publishing Company, Waco, Tex., has been incorporated by H. H. Shar, W. W. Seley, Sam. Sanger and J. H. Cargill. The capital stock is $10,000.

Failures.

R. S. Hutchinson, dealer in wall paper, &c., Menominee, Mich., has made an assignment.

E. B. Dye & Co., paper dealers, Louisville, Ky., made an assignment on Tuesday, August 20.

Blumberg Brothers, paper stock packers, Brooklyn, N. Y., were sold out by the sheriff on Wednesday.

The business of the B. F. Wade Company, printers, Toledo, Ohio, has been placed in the hands of a receiver.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

MIDDLE STATES.

Mortgagor.	*Amount.*
Jos. Warner & Co., Paterson, N. J.	$2,305
Jas. E. Purcell (Trenton Cycle Company), Trenton, N. J.	1,000

WESTERN STATES.

O. J. Treat, Fresno, Cal	172
S. A. Perry, San Francisco, Cal.	1,000
Harry L. Bunnell, Aurora, Ill.	2,000
Paul Freybourg, Chicago, Ill. (B. S.)	550
T. R. Brill (Hampshire *Register*., Hampshire, Ill.	300
L. W. Cramer (L. W. Cramer & Co.), Des Moines, Ia.	100
O. H. Baker, Indianola, Ia.	800
S. L. Page, Jewell Station, Ia.	150
Chas. J. Burkhart, Marshalltown, Ia.	2,000
S. L. Hill, Moulton, Ia. (Real)	400
J. T. Bowles, Ottumwa, Ia.	—
P. S. Everhart, Red Oak, Ia.	—
W. S. Bristol, Anthony, Kan.	160
A. Q. Miller, Clifton, Kan.	600
Wm. M. Bickford, Larned, Kan.	200
J. W. Mahaffey, Morganville, Kan.	200
T. A. Crandall, Battle Creek, Mich.	600
E. & J. Speedy, Minneapolis, Minn.	500
R. N. McFarland, Cleveland, Ohio.	122
D. H. Mitchell, Springfield, Ohio.	532
P. A. Mohr, Toledo, Ohio (Real).	1,200
Smith & Smith, Toledo, Ohio.	711
Walter Stoddart, Milwaukee, Wis.	750

SOUTHERN STATES.

Warren Brothers, Rich Hill, Mo.	1,000
Frank P. Bowlsby, St. Louis, Mo.	100
Cochran & Dyer, St. Louis, Mo.	319
Theodore G. Lorenz, St. Louis, Mo. (B. S.)	825
C. D. Morris, Trenton, Mo. (Real)	250
J. L. Sims et al., Orangeburg, S. C.	940

LIENS DISCHARGED.

D. S. Gilmore (*Democrat*), Emporia, Kan.	285
J. T. Ome, Spokane, Wash. (Real)	630
Chas. W. Wheeler, Waitsburg, Wash.	1,150

Fires.

The rag warehouse of Patrick O'Neil & Co., at No. 408 South Sixth street, Philadelphia, Pa., was gutted by fire on August 16, with a loss of about $15,000. The building and its contents were partially covered by insurance.

At Manchester, N. H., on August 20, fire in the storehouse of the P. C. Cheney Company, paper manufacturer, caused a loss of $1,500 principally to waste stored in the building. The cause was spontaneous combustion. Insured.

Fire broke out in the mill of the Morrison & Cass Paper Company, Tyrone, Pa., on August 19 and caused a loss of about $3,000 before it was extinguished. The fire originated in the basement of the liquor room in the gearing which drives the chipper immediately under the digesting room, and is supposed to have been caused by friction. The flames shot up the belt ways, from the basement into the liquor and

digesting rooms, and spread the length and breadth of these departments so rapidly that the men working in them were forced to make their escape through upper windows and over the roofs of lower buildings to the ground, the exit down the inside stairways being impossible. The system of fire extinguishers connected with the mill was quickly brought to bear on the flames, and in answer to a general alarm the town fire department was on the premises and in a short time the fire was under control. Men are at work clearing up and rebuilding, and new machinery to replace that injured by the fire has been ordered.

Personals.

Last Monday, while sitting in his office at No. 1 Reade street, Henry J. Howlett had an attack of vertigo. He was sent home in a carriage, and has been in bed ever since. He is recovering, however, and will soon be again at business.

Fred. Vilmar, of Perkins, Goodwin & Co., will start to-day on a wheeling trip, in the course of which he will take in Albany, Rome, Watertown, the Thousand Islands and Montreal.

S. M. Gladwin will sail for Europe to-day on the Etruria. He expects to be gone some time, and the date of his return is uncertain. It is hoped that he will return in the same good health and spirits which he now enjoys.

Accidents.

William Fanning had his hand badly hurt by being caught in the calenders at the mill of the Hurlbut Paper Manufacturing Company, South Lee, Mass., on August 17.

Alfred Bieber lost the little finger of his right hand at the mill of the Geo. C. Gill Paper Company, Holyoke, Mass., on August 17, and his other fingers were considerably bruised, but did not require amputation.

While Michael Guilleen was running calenders on the morning of August 17, at the mill of the Wauregan Paper Company, Holyoke, Mass., his right hand got caught in the rolls, and two fingers were badly crushed.

George Colton, employed in the engine rooms of the J. W. Butler Paper Company, 218 Monroe street, Chicago, Ill., was fatally injured in an explosion on August 14. The top of the engine blew off and a heavy piece of iron struck him on the head, crushing his skull.

David Beattie, employed at the mill of the Walloomsac Paper Company, Walloomsac, N. Y., while driving through the archway at the mill with a heavy load of paper was caught between the load and the arch, and three of his ribs were broken near the spinal column.

In Town.

G. W. Russell, Lawrence, Mass.; E. P. Lindsay and C. W. Rantoul, Boston, Mass.; R. A. France, New Haven, Conn.; C. H. Dobilinski and W. E. Wagg, Lambertville, N. J.; William Whiting and Mr. Sturtevant, Holyoke, Mass.; Wellington Smith, Lee, Mass.

General Notes.

Application was made on Monday for the appointment of a receiver for the Girsch Lithographing Company, of Nos. 65 and 67 Duane street, before Judge Beekman, of the Supreme Court. The company has not been making any money for some time past on account of the hard times, and the sheriff has been in possession of the place of business for a month past on two attachments aggregating $3,298. The company was incorporated in January, 1893, with a capital stock of $50,000, succeeding Girsch & Rochsler. On Tuesday Eugene A. Philbin was appointed receiver. The liabilities of the company are about $30,000, of which $8,750 is due to R. Hoe & Co. and $7,595 to the Potter Printing Press Company, both secured by chattel mortgages. Judge Beekman, of the Supreme Court, on Wednesday appointed Christian G. Hupfel receiver for the company, with a bond of $20,000. The sheriff retired on Thursday, the attachments having been settled.

Judgments aggregating $3,408 were entered on Tuesday against the Oppenheimer Publishing and Printing Company, of No. 546 Pearl street, New York, and College Point, L. I., by Erdman, Levy & Mayer in favor of the following named creditors: S. Trier & Son, $2,763; Simon Levy, $421; Louis Gross, $224. The business was established in 1873 as Oppenheimer & Co., and was incorporated on September 21, 1892, with a capital stock of $15,000. Joseph Oppenheimer was president up to his election as alderman last year, when he resigned in favor of his wife. The company published two weekly papers, the *Long Island Reporter* and the *Long Island Central Zeitung*, the latter in German. Erdman, Levy & Mayer state that they put the sheriff of Queens County in charge of the company's plant at College Point. The claims which they represent are on notes and for money loaned. In the trade the liabilities are estimated at $15,000. Most of the creditors are in New York.

Some time ago Wing & Evans, New York, recovered judgment for $20,000 against the American Wood Paper Company, incorporated under the laws of Rhode Island. The company failed, and, being unable to collect the judgment, Wing & Evans again brought suit against John W. Slater, of Slatersville, R. I., to recover $40,000. The writ was returnable in the Supreme Court at Providence, R. I., yesterday. The mills are now idle, and are located at Spring City and Manayunk, Pa. Mr. Slater, who is at present in Europe, is reputed to now be the owner of the property and otherwise very wealthy. He, as well as Wing & Evans, was a stockholder in the concern, and the judgment was obtained upon a claim for supplies furnished by the latter. It is understood that the present suit is brought to determine the liability of individual stockholders for the debt of a corporation, Wing & Evans, through their attorneys, asserting, and the attorneys on the other side denying, such liability.

The Westinghouse Machine Company, Pittsburg, Pa., reports business active and the outlook very flattering. Orders for compound engines during the past month included one 250 horse power to the Whittenton Manufacturing Company, Taunton, Mass.; one 100 horse power and one 125 horse power to the American Hydraulic Dredging Company, East Douglas, Mass.; one 80 horse power and one 100 horse power to the Sioux Consolidated Mining Company, Mammoth, Utah; one 200 horse power to Wendell & Smith, Overbrook, Pa.; two 80 horse power to the Upper Peninsula Hospital for the Insane, Newberry, Mich.; four 250 horse power to the United States Capitol Building, Washington, D. C.; one 250 horse power to the Connellsville Electric Light Company, Connellsville, Pa.; one 250 horse power to the Belvidere (Ill.) Electric Company; three 160 horse power to the Carnegie Library Building, Pittsburg, Pa.; one 125 horse power to the Hackensack (N. J.) Gas and Electric Company; one 300 horse power to the Wilkinsburg (Pa.) Electric Company; one 250 horse power to the Sing Sing (N. Y.) Electric Company; one 200 horse power to the Gloversville (N. Y.) Electric Company. In addition to these, the increased number of orders for "Standard" and "Junior" automatic engines indicates a general revival in all branches of manufacturing.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, August 23, 1895.

THE MONEY MARKET.—The opening in the stock market was weak, but most of the moving shares closed at higher figures. Call loans on stock collateral showed no tendency toward higher prices, although shipments of currency to the country further increased in volume. The usual rate was 1 per cent., but an occasional transaction was made in the street at a slightly higher figure. Inquiry for time loans is not active, but there is not much pressure of loanable funds in the market. Rates are 1½ per cent. for thirty days, 2 per cent. for sixty days, 2½ per cent. for ninety days to four months, and 2¼@3 per cent. for five to seven months on good marketable securities. There is a fair demand for commercial paper. Rates are 3¼@3½ per cent. for sixty day to ninety day indorsed bills receivable, 3¾@4¼ per cent. for four months' commission house and 4@4½ per cent. for prime four months', 4¼@4¾ per cent. for prime six months' and 5@6 per cent. for good four to six months' single names. Brokers in commercial paper report more doing. The foreign exchange market was inactive because remitters held off for better rates. Produce bills were in about the same supply as in the few days previous. Posted rates were $4.90 for sixty days and $4.91 for sight. Actual rates were $4.88¾@4.89¼ for sixty days and $4.89¾@4.90¼ for sight.

THE PAPER TRADE.—There is not much change in the conditions of the market. News is well in hand on orders and its price is steady. Book papers are reported to be meeting with a slightly improved call for the better grades, although the movement is irregular, prices on the lower qualities being variable. There is a good demand for Manillas, low grades being steady as to price. There is a fair demand for Writings, but without any special feature.

JUTE BUTTS.—The market is quiet, with paper quality quoted on spot at 1¼c. and new crop at 1.09c.

WOOD PULP.—There continues to be a good demand for Ground Wood, and supplies are scarce. Prices are firm.

WOOD FIBRE.—The low priced lots of Soda Fibre seem to have been somewhat cleared up, included in the sales being 500 tons at 1¾c. The market has steadied and 2c. is now the general quotation, there being a halt apparently to see what is going to happen. Domestic Bleached Soda is quoted at 2c., as to quality. Domestic Sulphite is quoted at 1¾@2¼c., as to quality, for Unbleached, and 3c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, —@3.15c.; Bleached, do., 3¾@4c.; Bleached Straw Pulp, 3.80c. This week there were 128 tons of Chemical Fibre imported at this port, being 53 tons from Antwerp and 75 tons from Hamburg.

FOREIGN RAGS AND PAPER STOCK.—There is a steady call for small lots, but no business of importance is being done. Imports for the week aggregated 3,295 bales and 128 tons, being 1,255 bs. rags, 128 tons chemical fibre and 2,040 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 53 tons; Bremen, 13 bs. manillas; Bristol, 364 bs. manillas; Hamburg, 180 bs. rags, 75 tons chemical fibre, 191 bs. manillas; Hull, 335 bs. rags, 466 bs. manillas; Leghorn, 250 bs. rags; Liverpool, 162 bs. manillas; London, 438 bs. rags, 244 bs. manillas; Marseilles, 600 bs. manillas; Rotterdam, 102 bs. rags.

DOMESTIC RAGS. — The market is quiet, although Whites are moving fairly well, prime packings going at 3.20@3¼c.

BAGGING, &c.—The market for Gunny is quiet, and no business is reported. Nominal quotations range from .95@1c. Mixed Bagging remains well cleaned up, and prime stock is firm in price. Imports of Manilla stocks for the week aggregated 2,040 bales, being 13 bs. from Bremen, 364 bs. from Bristol, 191 bs. from Hamburg, 466 bs. from Hull, 162 bs. from Liverpool, 244 bs. from London, and 600 bs. from Marseilles.

OLD PAPERS.—Manillas and Folded News are in steady call. We quote: No. 1 Hard White Shavings, 2.15@2½c.; No. 1 Soft White do., strictly free from wood, 2@2.05c.; Soft White, do., ordinary, 1¾@2c.; Old Ledgers, 1¾c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1¼c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, 90c.; No. 1 Manillas, ordinary, 75c.; No. 2 Manillas, 60c.; Light Book Stock, 60c.; Folded News (overissues), 50@55c.; Mixed Papers, 35c.; Commons, 25@30c.; Straw Clippings, 45c.; Binders' do., 45c.

STRAW.—Straw is quiet and unchanged. We quote: Long Rye at 50@60c.; Short Rye at 40c.; Wheat at 35@40c.; Oat at 40c.

ROSINS.—Lower grades were somewhat neglected. We quote: Common to Good Strained, $1.72½@1.80; E, $1.85@1.90; F, $2; G, $2.05@2.10; H, $2.15; I, $2.40; K, $2.55@2.60; M, $2.80; N, $3; W G, $3.20.

CHEMICALS.—The market for heavy chemicals is generally quiet. Late Liverpool advices speak of that market as follows: "There is a firmer tone in the market for alkalies. There is no change meantime, however, in the quotation of 58 per cent. alkali, but the arrangements in progress between the larger manufacturers will doubtless lead to a material advance in price. For the present no forward quotation is obtainable. Caustic Soda meantime unchanged, and spot quotations are: F. o. b. Liverpool, 77 per cent., £9 7s. 6d.; 74 per cent., £8 7s. 6d.; 70 per cent., £7 10s.; 60 per cent., £6 10s.; 10 ton lots and upward. Soda Crystals and Bicarbonate are without alteration, as are also Chlorate of Potash and soda. Bleaching Powder is in rather better request for export at £7 5s., f. o. b. Liverpool, and £6 17s. 6d. to £7 f. o. r. makers' works." In the local market Bleaching Powder is in somewhat better inquiry, and spot is stronger, ranging 1.85@1.90c. Alkali is in better call and is firmer. Caustic Soda is in improved demand, especially for forward delivery. During the week there have been sales of Bleach at 1.85@1.90c.; Soda Ash at 1¼c.; Caustic Soda, 2.10c., and Alkali, .90@1.05c.

CHINA CLAY.—The demand, as usual at this time of the year, is light, and the market presents no fresh features of interest. There is a promising outlook for fall trade, however, and the market remains steady. Small sales are making within the range of $11@16 per ton as to quality and quantity.

TWINES.—There is a brisk trade in progress. We quote: Sisal Hay Rope, 5½c.; Sisal Lath Yarn, 5c.; Jute Ready, 5@6c. Twines—Jute, 18, 10½@11c.; 24, 10@10½c.; 36, 9@9½c.; Jute and Hemp, 18, 13@14c.; 24, 12½@13½c.; 36, 12@13c.; Hemp, 18, 16c.; 24, 15½c.; 36, 15c.; Marlines, Jute, 4½, 9c.; 6, 8½c.; 8, 7½c.; Jute and Hemp, 6, 11c.; 8, 9c.; American Hemp, 4½, 14c.; 6, 13c.; 8, 12c.; Russian Hemp, 4½, 14c.; 6, 13c.; 8, 12c.

COAL.—It is reported that the carrying companies have reached an agreement, and that the product of anthracite for next month will be restricted. The details of the plan have not yet been made public.

EDWIN BUTTERWORTH & CO.,
MANCHESTER, ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing, Wood Pulp, Moist and Air Dry Pulp, Soda and Ground Pulp,
83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street.
JAMES PIRNIE, A. S. DEMAREST, } Managers.

WATERBURY
Felts and Jackets.
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
Adapted to *every* grade of paper from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.16	@	$0.21
Flat Caps, superfines	11½	@	14
Flat Caps, fines	11	@	13
Flat Caps, engine sized	7	@	9
Blotting, American	8	@	12
Blotting, English	17	@	....
Book, super sized and calendered	5	@	8
Book, super sized and tinted	5	@	8
Book, extra machine finish	5	@	....
Book, machine finish, low grade	4½	@	5
News	2¾	@	3
Poster	3	@	....
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3¾	@	4
Hanging, brown	2¾	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9¾
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	60	@	80
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¾	@	6¾
Manillas, No. 2	5	@	6
Manillas, Bogus	2¾	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	55	@	60
Hardware, light colored, No. 1	4½	@	....
Hardware, No. 1, glazed, tarred	4½	@	....
Hardware, No. 1, glazed	4	@	....
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	30.00	@	40.00
Strawboards, air dried, No. 1, ℔ ton	40.00	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	....
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	65	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	52
24×36, from 24 to 26 lbs. ℔ rm	....	@	48
22×32, from 24 to 26 lbs. ℔ rm	45	@	....
20×30, 21 lbs., ℔ rm	....	@	34
20×30, from 14 to 17 lbs. ℔ rm	26	@	....
16×22, from 12 to 13 lbs. ℔ rm	23	@	....
18×28	....	@	24
15×20, 10 lbs. ℔ rm	....	@	17
15×20, from 7 to 8½ lbs. ℔ rm	....	@	13
14×18	....	@	12
12×16	....	@	11
11×15	....	@	10
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12x18	....	@	14
14x20	....	@	18
Card Middles, ground wood	5½	@	6¾
Card Middles, long fibre wood	8¾	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	...
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	...

Woolen Rags.

Comforter Stock	....	@	....
White Woolens	8	@	...
Blue Gray Stockings	7	@	8
White Stockings	10	@	12
Blue Flannels	6	@	....
Reds, old	5½	@	6
Reds, new Shirt Clippings	15	@	16
Mixed Softs, free of Carpets	4½	@	5½
Seamed Cloth	....	@	3½
Skirted Cloth	2½	@	....
New Cloth Clips	7	@	9
New Satinets, clean stock	1¼	@	1½
Satinets, old	65	@	75
Seams	1	@	1¼
Delaines, stripped for extract	1½	@	2
Blankets, Woolen	2½	@	2½
Wool Carpets	1½	@	2
White Linseys	5	@	6
Mixed Linseys	75	@	1

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	4¼	@	....
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4½	@	4¾
City Whites, No. 1	3	@	3¼
New Seconds, light	2¼	@	....
New Seconds, dark	1¾	@	2
No. 2 Whites	¾	@	1.15
Cotton Canvas, No. 1	3	@	....
Linen Canvas, No. 1	....	@	2¼
Country Mixed, free of Woolens	60	@	...
Seconds (City)	....	@	....
Colors, ℔ 100 lbs	....	@	....
Manilla Rope	....	@	2
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	1.10	@	1.30
Mixed Bagging, No. 1	⅞	@	1
Burlap Bagging, No. 1	1.10	@	1.15
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	....	@	....
Jute Waste	¼	@	1¼

Shavings and Old Paper.

White Collar Cuttings	3	@	....
White Envelope Cuttings	3½	@	....
Hard White Shavings, No. 1	2¾	@	3
Soft White Shavings, strictly free from wood	2.15	@	....
Soft White Shavings, ordinary	1⅞	@	2
Mixed Shavings, part white	1	@	1½
Ledger and Writing	2	@	2.10
Solid Stock	....	@	1¼
Book Stock, No. 1 light	....	@	1¼
Old Newspapers	40	@	....
Manillas No. 1	....	@	1.15
Manillas No. 2	80	@	....
Mixed Manillas	60	@	....
Hardwares, No. 1	65	@	....
Mixed Papers	40	@	....
Commons	25	@	30
Binders' Board Cuttings	50	@	....
Strawboard Cuttings	45	@	50

English Rags, &c.

New Cuttings, cotton	5	@	5½
London Fines, cotton	3⅞	@	4
Outshots, cotton	2⅞	@	3
Seconds	1⅝	@	1.65
Thirds	1¼	@	1⅜
New Print Tabs	2¾	@	3
Checks and Blues	2½	@	2¾
Light Prints	1½	@	1¾
Light Fustians	2	@	2¼
Dark Fustians	1¾	@	1⅞
Black Calicoes	1½	@	1¾
First Canvas Linen	3½	@	4
Second Canvas Linen	3	@	....
Gunny Bagging, No. 1	1	@	1.02½
Mixed Bagging, No. 1	80	@	85
Burlaps Bagging, No. 1	....	@	1.30
Rope, Manilla	1.95	@	2
Rope, Manilla, tarred	....	@	2
Jute Threads	....	@	1⅞
Clean Jute Ropes	2	@	2¼
Mixed Rope	1½	@	1¾
Flax Tow	1¼	@	1½

English Old Papers and Shavings.

Hard Shavings, No. 1	2	@	....
Soft Shavings, No. 1	2¼	@	2⅜
White and Colored Shavings, No. 1	1¾	@	1⅞
White and Colored Shavings, No. 2	1	@	1⅛
Cream Post Shavings	2½	@	....
Paper Collar Cuttings	....	@	2
Briefs and Letters	1⅝	@	1¾
Books and Pamphlets	1.10	@	....
Old Newspapers	....	@	....
Broken News and Letters	⅞	@	1
Old Blank Books	2¼	@	2½
White and Buff Railway Sheets	1¼	@	....

Japanese Rags.

Blues, Hiogo, ex store	1.30	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℘ cent	....	1 @	1.30
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	⅝
Alum, Diamond	....	@	2½
Alum, pearl	2¾	@	2⅝
Alum, porous	2¾	@	2½
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¼
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	1.85	@	1.95
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℘ cent	2.20	@	2.30
Clay, China, English, ℘ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℘ ton	9.50	@	10.00
Clay, Terra Alba, French, ℘ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	30	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℘ bbl	1.75	@	1.80
Rosins, E, ℘ bbl	1.85	@	1.90
Rosins, F, ℘ bbl	2.00	@	....
Rosins, G, ℘ bbl	2.05	@	2.10
Rosins, H, ℘ bbl	2.15	@	....
Rosins, I, ℘ bbl	2.40	@	....
Rosins, K, ℘ bbl	2.55	@	2.60
Rosins, M, ℘ bbl	2.80	@	....
Rosins, N, ℘ bbl	3.00	@	....
Rosins, W G, ℘ bbl	3.20	@	....
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℘ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℘ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2½
Sulphuric Acid, 66 ℘ cent	1	@	1¾
Ultramarine, blue	14	@	17¾
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.80

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	3⅞	@	4
No. 2 Whites	2¾	@	2⅞
Common Seconds	....	@	2½
Thirds and Blues	1¾	@	1⅞
Southern Mixed Rags	80	@	90
Colors, country	½	@	¾
Colors, city	25	@	30
New Calicoes, light	1¾	@	1⅞
New Calicoes, dark	1	@	1½
Shirt Cuttings, best	3⅞	@	4¼
Shirt Cuttings, good	3¾	@	3¾
Shirt Cuttings, unbleached	3½	@	3½
Shirt Cuttings, unbleached No. 2	2	@	2½
Shirt Cuttings, cheviots	2½	@	2½
Overall Cuttings, blue	2½	@	2¾
Overall Cuttings, brown	1¾	@	1⅞
Shoe Rags, bleached	3½	@	3⅝
Shoe Rags, unbleached	3¼	@	3¼
Shoe Rags, brown	2½	@	2¾
Cotton Flannels, bleached	3	@	3½
Cotton Flannels, unbleached	3½	@	3¾
Corset Rags, drab	3½	@	3¾
Corset Rags, white	4	@	4¼
Tailors' Seconds	1¾	@	1⅞
Tailors' Colors	20	@	25
Cotton Canvas	2¾	@	2¾
Cotton Canvas, No. 2	1¾	@	1¾
Linen Canvas	1½	@	1¾
New Canvas Cutting	3¼	@	3½
Insole Canvas	3	@	3¼
Print Papers, best	35	@	40
Folded News	50	@	....
Old Waste Papers	25	@	....
Manilla Paper, No. 1	1.05	@	1.10
Manilla Paper, good mixed	85	@	95
Manilla Paper, blues	65	@	....
Mixed Book Stock	95	@	1.00
Books and Pamphlets	1.10	@	1.15
Book Stock, light	65	@	70
Ledgers and Letters	1.80	@	1.85
Soft Book Shavings	1¾	@	2¼
Hard White Book Shavings	2¼	@	2¾
Leather Board Chips	70	@	75
Straw Chips	35	@	40
Shivey Bagging	1¾	@	1½
No. 1 Factory Bagging	1.00	@	1.10
Burlap Bagging	1.00	@	1.10
Burlap Bagging, large pieces	1⅞	@	2¼
Kentucky Bagging	1	@	1¼
Mixed Bagging	¾	@	⅞
No. 2 Bagging	¾	@	⅞
Shakings, soft	⅞	@	1
Tarred Shakings	1	@	1¼
Standing Rigging	2½	@	2¾
Standing Rigging, foreign	2½	@	2¾
Bolt Rope	2	@	2.05
Oakum Junk, No. 2	1½	@	1⅝
Tarred Paper Junk	1.15	@	1.20
Tarred Paper Junk, inferior	¾	@	⅞
Manilla Rope	1¾	@	1⅞
Tarred Manilla	1¾	@	1⅞
Hemp Strings	1	@	1¼
Sisal Strings	1.15	@	1.20
Wool Strings	1.10	@	1.15
Flax Tow	¾	@	⅞
Flax Waste	¾	@	⅞

Chemicals.

Alkali	92½	@	1.00
Aluminous Cake, currency	1¼	@	1½
Alum, American ground	1.65	@	1.70
Alum, American lump	1.60	@	1.65
Anti-Chlorine	2	@	2½
Bichromate Potash	9½	@	10
Bleaching Powder	1.82½	@	2
Caustic Soda, 74 ℘ cent	2	@	2¼
Clay, English, ℘ ton	13.00	@	17.00
Clay, American, ℘ ton	10.00	@	11.00
Copperas, ℘ lb	50	@	55
Extract Logwood	5½	@	10½
Lime, Rockland, ℘ bbl	85	@	90
Prussian Blue, ℘ lb	36	@	38
Prussiate Potash, yellow	18	@	18½
Prussiate Potash, red	35	@	37
Rosin, common strained, ℘ bbl	1.90	@	2.50
Rosin, Medium	2.20	@	3.00
Rosin, extra pale, ℘ bbl	3.00	@	4.50
Sal Soda, ℘ lb	65	@	70
Soda Ash, 48 ℘ cent. caustic	1.30	@	1.50
Soda Ash, 48 ℘ cent. carbonated	1.00	@	1.25
Soluble Blue	2.50	@	3.50
Sugar Lead, white	8¾	@	...
Sugar Lead, brown	5½	@	6
Sulphuric Acid, 66°	¾	@	1¼
Terra Alba, ℘ ton	9.00	@	15.00
Ultramarine, ℘ lb	7	@	25
Venetian Red, ℘ lb	1½	@	2½
Vitriol, Blue	3½	@	4
Yellow Ochre	½	@	1

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WANTED—POSITION AS FOREMAN IN A tissue or wood manilla mill; familiar with all kinds of stock and understands the handling of wood for tissue. WARD, care Journal.

WANTED—POSITION TO REPRESENT A good felt or wire maker; am at present superintendent of a two machine paper mill. Apply SUPERINTENDENT, care of Journal.

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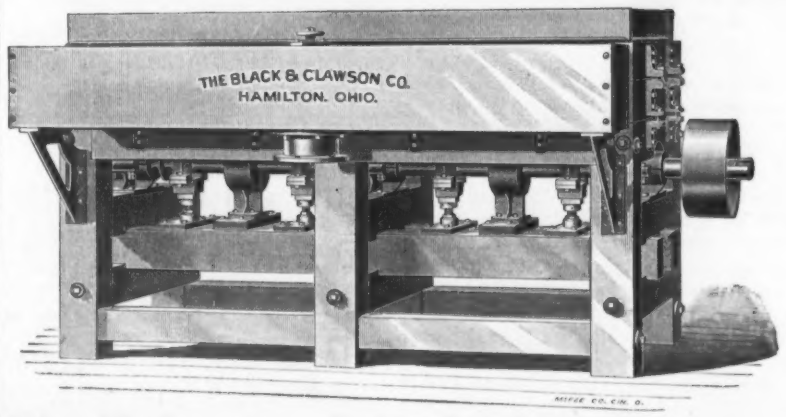

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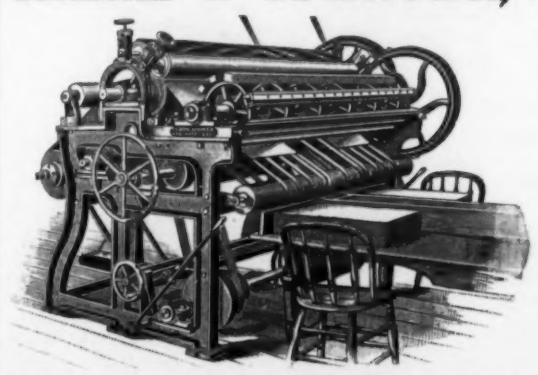

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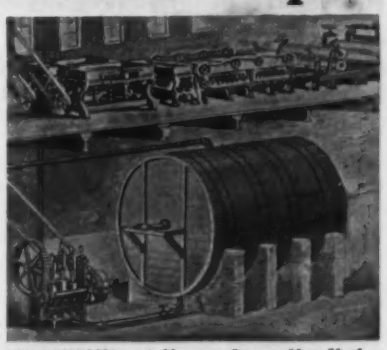

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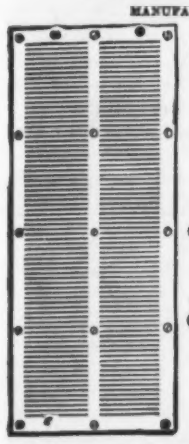

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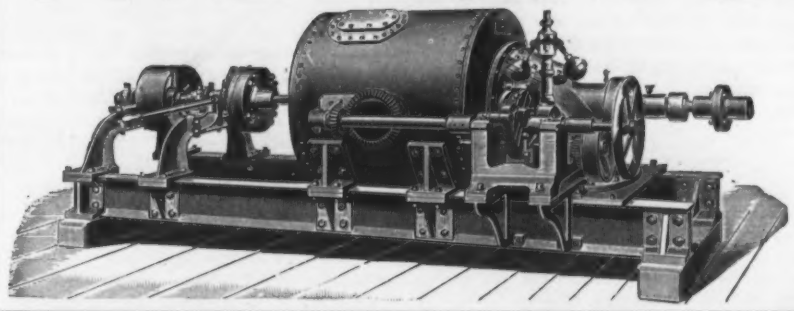

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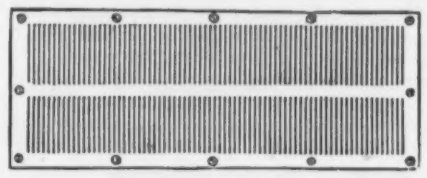

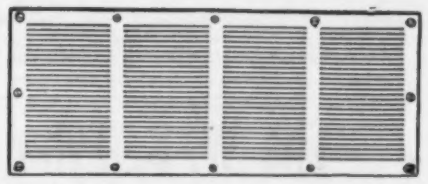

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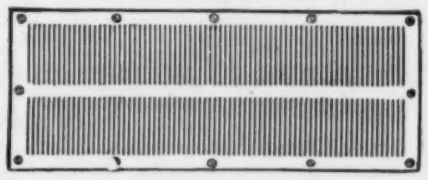

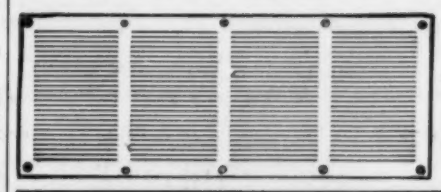

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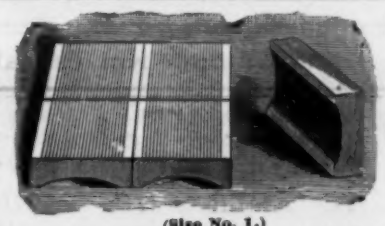

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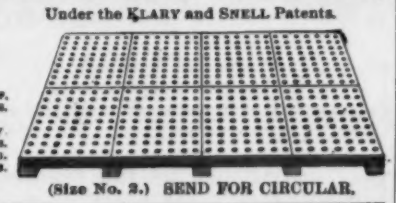

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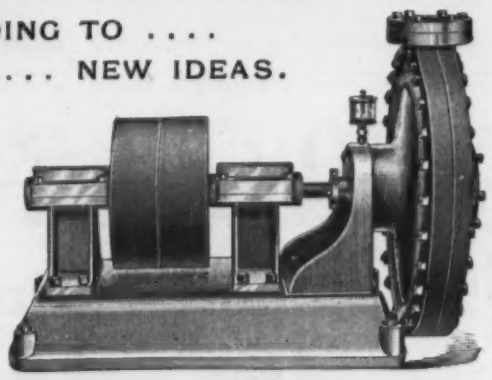

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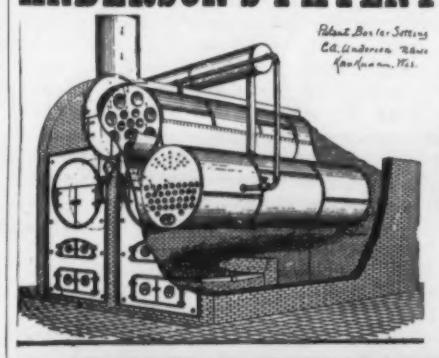

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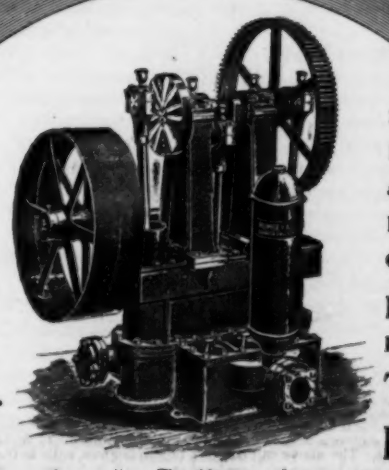

Fig. 669.

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Seneca Falls, N. Y., U. S. A. — **35 Dey St., NEW YORK.**

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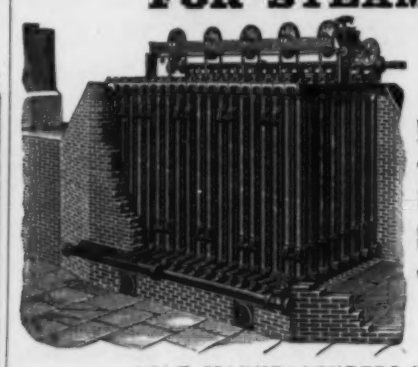
GREEN'S PATENT FUEL ECONOMIZER

FOR STEAM BOILERS.



ADVANTAGES:

High temperature of feed water, in many cases up to 30° degrees, thereby effecting a GREAT SAVING IN COAL.

Increased heating surface, thereby increasing capacity of the boilers.

A large volume of water always in reserve at the evaporation point, ready for immediate delivery to the boilers.

Acting as an efficient water purifier and keeping the heating surface of the boilers clean, the result being FUEL SAVED.

Can be applied to ANY TYPE of boilers without stoppage of works.

Only Medal Awarded for Flue Heater at the Columbian Exposition.

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THE FUEL ECONOMIZER CO.

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FROST STEAM PUMP

FOR PAPER MILL USE.

FROST STEAM PUMP condenses its exhaust steam and returns it with its heat to the boiler. A great saving made.

Will earn its cost in four months' use.

WE ALSO MANUFACTURE

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As a Boiler Feeder it has no equal.

IT HAS NO DEAD CENTRE.

Write for particulars and prices.

Union Manufacturing Co.,

BATTLE CREEK, MICH.,

SOLE MANUFACTURERS.

Manufacturing News.

EASTERN STATES.

P. Forestelle, lately of Seneca Falls, N. Y., is about to start up the Roberts mill, now idle, at Shelton, Conn., and will run it on tissue and toilet papers. He expects to have the mill running by September 1. He will make ream tissue and toilet papers in packages and rolls for the trade, having had considerable experience in this line, and expects to turn out a standard quality of goods.

The paper manufacturers and other parties using water power at Lee, Mass., have held a meeting to consider the practicability of using the flow of water from Goose Pond to generate electrical power. The stream has a fall of about 600 feet from the pond to Clark & Spencer's machine shop, where it is proposed to put in Pelton water wheels and set up an electric plant. It is estimated that 2,000 horse power can be secured by this means, at a cost of $75,000 for the plant, including buildings, piping, motors, &c. G. K. Baird, A. W. Eaton, and E. S. Rogers have been appointed a committee to ascertain the feasibility of the scheme.

MIDDLE STATES.

On August 1 the Carlisle Paper Box Company, Carlisle, Pa., broke ground for a large addition to its box plant. The building will be 50x65 feet, forming an L, and give a floor space of 20,000 square feet. James Porter, contractor for the work, promises to have the building ready by September 1.

The Camden Water Wheel Works, Camden, N. Y., have recently made a contract with the Racquette River Pulp Company, Colton, N. Y., to furnish one pair of 24 inch horizontal wheels, which will be used to run the machinery, and one 12 inch horizontal wheel for running a dynamo to light its plant. The pulp company is now using six of the Camden horizontal wheels.

The Remington Paper Company, Watertown, N. Y., has voluntarily restored the wages of its employees to former rates by an increase of 10 per cent.

The Noble & Johnstone Machine Company, Hoosick Falls, N. Y., has just received an order from the Cleveland Paper Company for two "Monarch" engines.

The West Chester Paper Mill Company, which had decided to locate at Exeter, Pa., and had begun to refit the old pistol factory at that place as a paper mill, has discovered that difficulties as to drainage make the site useless. The company is now looking for a location in West Pittston, and negotiations are pending to that end.

The Sheffield Paper Company, Sangerties, N. Y., has closed a contract to furnish the United States Government with 700 tons of paper to be used in the manufacture of internal revenue stamps.

Ground is being broken at York Haven, Pa., for another paper mill.

The Genesee Paper Company, Rochester, N. Y., is replacing its present dam at the lower falls by one of stone and of larger dimensions. This company intends, it is said, to add two large buildings to its present plant.

WESTERN STATES.

The directors of the company which is erecting the paper manufacturing plant at the Lower Quinnesec Falls, Wis., have decided to construct the buildings of brick instead of wood. This, with other changes, will add materially to the cost.

The Three Rivers Paper Company, Three Rivers, Mich., produced, lately, in a continuous run of twenty-four hours, a sheet of paper 6 feet wide and 65 miles long. If only 1 foot wide it would be nearly 400 miles long. The sheet weighed between 8 and 9 tons.

A consultation between John Hoberg and the people of Green Bay, Wis., has developed the fact of an all round misunderstanding, and the contract for the removal of the paper plant to that place will be carried out. Mr. Hoberg visited Green Bay on August 10 to complete all details and to begin work on the new mill.

It is reported that a paper mill is to be built at St. Cloud, Minn.

The water power at Sault de Sainte Marie, Mich., has been sold, it is reported, to a party of capitalists, F. H. Clerque being one of the number. It is proposed to build wood pulp and chemical fibre mills; also a large paper mill of 100 tons daily capacity.

The new mill of the Grand Rapids Pulp and Paper Company, at Bearin, on the Wisconsin River, is being rapidly pushed forward. The company is constructing a dam, excavating a large mill pit from solid rock, and erecting large, substantial brick buildings. It has contracted with the James Leffel & Co., of Springfield, Ohio, for fifteen of its large "Samson" turbine water wheels, which will be in position in November. All of the work is being done upon the most approved plan, and is of the most substantial character.

The Quinnesec Falls Company, Quinnesec Falls, Wis., has begun work on its pulp and paper mill on the Menominee River, where it has 64 to 70 feet fall. A substantial stone dam will be built, and a steel feed pipe 16 feet in diameter will extend 225 feet, at which point it will be reduced to 7 feet diameter, from which branch pipes will extend and be connected to the iron flumes in which the water turbines will be placed, and fully 5,000 effective horse power will be developed. The principal owners are the members of the Badger Paper Company, Kaukauna, Wis. The buildings will be built and a part of the machinery will be put in operation the present season. The plant when completed will be among the largest in the Northwest; it will consist of four paper machines, fifteen D. T. Mills No. 1 pulp grinders, the latter capable of turning out 60 tons of ground wood pulp, dry weight, each twenty-four hours, and a sulphite plant of 15 tons capacity per day. C. B. Pride, of Appleton, has been employed as the architect and will have charge of the construction of dams, buildings and location of the machinery. The turbine wheels will be of the "New American" type, but of special pattern, and will be designed and built under the supervision of W. M. Mills, the veteran hydraulic and mechanical engineer, vice-president and general manager of the Dayton Globe Iron Works, successors of Stout, Mills & Temple, of Dayton, Ohio, to whom the contract for the turbine wheels, iron flumes, pulp grinders and iron piping has been awarded. There are some novel features adopted which originated with Colonel Frambach, of the Badger Company, and were placed in the hands of Mr. Pride and Mr. Mills to develop. The Dayton Globe Iron Works have also received an order from the Centralia Pulp and Water Power Company, of South Centralia, Wis., for additional D. T. Mills grinders and machinery for the enlargement of its present pulp mill at that place.

The Union Fibre Company, St. Paul, Minn., proposes to build a mill for the manufacture of paper pulp. It has made a proposition to the board of trade of Mankato, Minn., to locate the plant at that place. This proposition is presented in two forms: One, that the people of Mankato shall provide the company with a building 40x60 feet in dimensions and two stories high, accessible to water supply and having every facility. On this proposition it promises to set up the necessary machinery and start the mill within sixty days after the completion of the building. The second plan is that the city of Mankato shall donate 30 or 40 acres of land suitably located for a pulp mill, on which condition the company will invest $40,000 in perfecting the plant during the coming two years. The board of trade has expressed its disinclination to give any donation for the location of a manufacturing industry.

SOUTHERN STATES.

The recently burned paper box factory of George Francke, Baltimore, Md., is to be rebuilt at once.

The Singerly Pulp and Paper Company, Singerly, Md., has shut down its paper mill, and it is reported that its pulp mill is to be shut down for a short time.

CANADA.

The Royal Paper Mills Company, East Angus, Que., is now represented in Montreal by J. B. Kerr, who is also its selling agent in the West. The company intends putting a new machine in its mills.

The third big raft of pulp wood has left Canada, by way of the "Soo" and Lake Michigan, and was landed at the Supply Company's docks at Long Tail Point, Wis., recently. It contains 4,000 cords.

Miller Brothers & Co., Glen Miller, Ont., are putting a fourth machine into their pulp mill. They report pulp to be a scarce article in Quebec just now, and that the Laurentide Pulp Company, Grande Mere, Que., has none to sell, owing to the activity of the American demand.

The water power at the Lachute and St. Jerome, Que., mills of J. C. Wilson & Co. has been affected by the dry season, but both mills are working full time, and the company reports an excellent business for the month of July.

W. W. Bothwick, Eastern representative of the W. S. Tyler Wire Works Company, Cleveland, Ohio, reports that business in his line is good. The company which he represents manufactures wire cloth for paper making machines and wire goods generally, and its products are well known throughout the country.

The Abendroth & Root Manufacturing Company has of late filled a number of notable orders for its improved Root water tube boiler, principally in New York city and vicinity. It may be mentioned in this connection that Arthur Loretz, Jr., formerly New York manager for the National Water Tube Boiler Company, is now representing the "Root" boiler at 28 Cliff street, New York.

American Sulphite Fibre Association.

An adjourned meeting of the sulphite fibre manufacturers was held at Boston on Wednesday last, those present being Allen M. Fletcher, Rumford Falls Fibre Company and Alpena Sulphite Fibre Company; E. F. Birmingham, Dexter Sulphite Company and Remington Pulp and Paper Company; G. E. Keith, Howland Falls Pulp Company; N. M. Jones, Katahdin Pulp and Paper Company; Thomas P. Burgess, Burgess Sulphite Fibre Company; B. F. Hosford, Bangor Pulp and Paper Company; F. C. Whitehouse, Lisbon Falls Fibre Company; E. A. Everett, High Falls Sulphite Fibre Company; James Conley, Manufacturing Investment Company; Henry Richards, Richards Paper Company; C. E. Johnson, J. & J. Rogers Company; F. Bertuch, Glens Falls Paper Company; J. Fred. Ackerman, Piedmont Pulp and Paper Company and G. H. Friend Paper and Tablet Company; D. F. Cowles, Barclay Fibre Company; E. C. Hargrave, E. C. Hargrave & Co.; and A. Hesselbacher, Michigan Sulphite Fibre Company.

It was decided to call the organization the American Sulphite Fibre Association, and the following named officers were elected: President, G. E. Keith; vice-president, Thomas P. Burgess; second vice-president, J. Fred Ackerman; secretary and treasurer, C. E. Johnson; directors, Allen M. Fletcher, N. M. Jones, B. F. Hosford, F. C. Whitehouse and E. C. Hargrave.

This organization is simply a preliminary step. It is proposed to form a corporation with a capital of $100,000 to sell the product of the various companies, and a committee consisting of D. F. Cowles, E. C. Hargrave and Fred. Bertuch was appointed to consult counsel as to the formation of such a corporation.

The association will hold a meeting at the office of Perkins, Goodwin & Co., New York, on September 11.

When using the ordinary brass check valves it is a good idea to have them a size larger than the pipe calls for, as the water will then flow through them with less friction.

Angle valves are good to use on cold water pipes, especially if they are of the Jenkins type, for if they do not prove to be tight with the hard rubber disk, a new disk may be made of a piece of leather belt which will last indefinitely.

THE "Hamilton" Felt.

"Best and Most Economical Made."

WISE PAPER MAKERS

don't always want to buy high priced imported Felts, nor do they want to experiment with inferior grades of domestic ones. The "Hamilton" answers their requirements in every respect.

In ordering mention kind of stock used, quality of paper made and speed of machine.

Shuler & Benninghofen, Hamilton, Ohio.

Ventilating Fans, Blowers and Engines, Paper Dryers and Heating Apparatus.

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HUYETT & SMITH MFG. CO.,

DETROIT, MICH.

The W. S. Tyler Wire Works Co.,

CLEVELAND, OHIO.

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FOURDRINIER WIRES,

Cylinder Faces and Washer Wires.

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F. P. Van Denbergh, B.S., M.D., F.C.S. R. A. Witthaus, A.M., M.D. Consulting. Isaac Kemoe, Ph.D.

CHEMICAL ENGINEERS, ANALYSTS AND INDUSTRIAL CHEMISTS.

Analyses, processes and counsel in sulphite, pulp and paper manufacture. Ten years Chemists to the City of Buffalo, and Professors of Chemistry University of Buffalo.

LABORATORY: Erie County Bank Building, Niagara and Main Sts., BUFFALO, N. Y.

THE GENERAL FIRE EXTINGUISHER COMPANY,

CONTROLLING THE INVENTIONS AND APPARATUS PERTAINING TO AUTOMATIC SPRINKLERS OF

Frederick Grinnell, William Neracher, John Hill, William Kane and others.

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EXECUTIVE OFFICES, PROVIDENCE, R. I.

THE CEDAR POINT FOUNDRY, Port Henry, N. Y.,

Builders of all kinds of

PAPER AND PULP MILL MACHINERY.

The Jeffers Suction Screen,

Made in three sizes: 8, 9 and 10 Plates.

IMPROVED WET MACHINES.

Three-Pocket Wood Pulp Grinders.

The Only Builders of a Steam

"DRAG SAW."

GATE AND PRESSURE VALVES A SPECIALTY.

Five-Way or Double Pressure Grinder Valves a Specialty.

Send for Blue Prints. Orders promptly filled.

HOLLINGSWORTH & WHITNEY CO.,

MANUFACTURERS OF ALL GRADES OF

Manilla Papers AND Pure Fibres.

PROPRIETORS OF

TACONNET PAPER MILLS, Winslow, Me.....Product. 40 tons Manilla Paper daily.
AROOSTOOK MILLS, Gardiner, Me.....Product: 8 tons No. 1 Manilla daily.
COBBOSSEE MILLS, Gardiner, Me.....Product: 10 tons No. 1 Manilla daily.
PEQUOSSETTE MILLS, Watertown, Mass.....Product: 13 tons No. 1 Manilla daily.
TACONNET PULP MILLS, Winslow, Me.....Product: 50 tons Wood Pulp daily.

Boston Office:
44 FEDERAL STREET.

New York Office:
Mutual Reserve Building, 309 Broadway, cor. Duane St.

Obituary.

OWEN WARD.

Owen Ward died at his residence, No. 469 West Fifty-seventh street, New York, on Monday, August 19.

Mr. Ward was born of Irish ancestry in Ireland in 1830, and came to the United States in 1848. In 1855 he started in the rag business in the city of New York in a small way, and by close attention and honest dealing developed his trade until he became one of the largest dealers in domestic rags in the United States. He was first located at 451 West Thirty-ninth street, where he continued for a few years, and then removed to 450 West Thirty-ninth street, where he remained in business up to

OWEN WARD.

the time of his death. He was burned out in the fall of 1880, and then erected the five story brick warehouse and stable in which his business was lately conducted.

On July 5, 1852, Mr. Ward married Bridget McArdle, by whom he had six children—four sons and two daughters. Three of his sons have been associated with him, Peter J. being admitted to partnership in 1880, Francis D. in 1885 and James P. in 1890, and these took charge of the financial affairs of the firm, the sorting and packing, and the selling, in the order in which they are named. Mr. Ward was the oldest dealer in his line in the city of New York. The funeral services were held at the Church of St. Paul the Apostle on Thursday, and the interment was at Calvary Cemetery.

JOSEPH C. KNEELAND.

Joseph C. Kneeland, of Northampton, Mass., was instantly killed by a train on the Boston and Maine Railroad in that city on August 21. Mr. Kneeland was a well-known inventor of paper mill machinery, and had patented many valuable appliances. The invention which probably was the most valuable was the "lay boy," for taking up and piling paper as it comes from a machine. He also devised a paper folder in general use, and was the inventor of an improved card printing press. Each of these inventions yielded Mr. Kneeland large sums of money, but he had no faculty for accumulating wealth.

Mr. Kneeland was eighty years old. He was born at Ashleyville, a section of West Springfield, in 1816. He early learned the trade of printer on the Northampton *Gazette*, and at various times followed his calling in Greenfield, Worcester, Troy and New York. On his return to Northampton in 1870 he devoted his entire time to invention, for which he possessed a decided genius. He was married many years ago, and had five children, two of whom, Edward L. and Ellen Kneeland, are now living.

ALFRED IRELAND.

Alfred Ireland, manager of the New York branch of Marcus Ward & Co., manufacturing stationers, Belfast, Ireland, died suddenly on Wednesday, August 14, at his home, 29 West Twentieth street. The cause was heart disease.

Mr. Ireland was the son of William Ireland, a bookbinder, his mother being a daughter of the late Alexander Priestley, the paper manufacturer. He was born at Princeton, N. J., on October 6, 1835, and early removed to Philadelphia, where he secured a situation with William M. Collins & Co. He was afterward employed in the paper mills of his uncle, Alexander Priestley, at Singerly, Md., which are now known as the Cecil Paper Mills. In 1876 he opened in Philadelphia a branch office for Marcus Ward & Co., in connection with the Centennial Exhibition, and continued the business in that city until about 1878, when it was removed to New York, and an office was located at 734 Broadway, and subsequently removed to its present location, 310–318 Sixth avenue.

Mr. Ireland was married to Hannah Bassett, who died in November, 1893. He had no children, but left three sisters, Annie, who made her home with him, the wife of William H. Ward, and the wife of Surgeon Wells, of the United States Navy.

The funeral was held in Grace Church chantry on August 17. The burial was in Philadelphia.

ELISHA B. PEASE.

Elisha Brooks Pease, one of the pioneer paper dealers of Detroit, Mich., died on August 16, at his home, 424 Second avenue, that city. Mr. Pease was successively clerk and head of department for the Detroit Paper Company, and opened the Windsor branch for that concern. He afterward associated himself in business with John A. Gebhardt, to whom he thus gave a start in life, and at the end of six years purchased Mr. Gebhardt's interest. This case is one of several where he assisted struggling young men to rise in business, sometimes at the expense of his own purse; in fact, but for his liberality and philanthropic ideas he might have amassed a large fortune. Twenty years ago his health began to fail, and on the admission to partnership of his son, Percival S., four years ago, he retired from active business, retaining merely a general supervision of the books, which task he performed faithfully up to the day before his death.

Sulphates.

The sulphuric acid in sulphates is always determined by precipitating it by means of barium chloride solution from the solution rendered acid by hydrochloric acid, and weighing the barium sulphate produced.

ALUM.

Potash alum, $K_2Al_24SO_4, 24H_2O$, molecular weight, 948.

Soda alum, $Na_2Al_2\ 4\ SO_4,24H_2O$, molecular weight, 916.

Ammonia alum, $(NH_4)_2Al_2\ 4\ SO_4, 24\ H_2O$, molecular weight, 906.

Sulphate of alumina, $Al_2\ 3\ SO_4, 18\ H_2O$, molecular weight, 666.

Since the value of all alums for paper makers' purposes depends on the amount of combined alumina they contain, and on the absence of free acid, of iron and of insoluble matter, it becomes necessary for our present purpose to give methods for the determination of these four things only.

The presence or absence of iron may be determined by the use of ferrocyanide of potash. For this purpose a considerable amount of alum should be dissolved in a moderate quantity of water, and the solution heated to boiling after the addition of a few drops only of nitric acid. The solution is then allowed to cool, and some freshly made solution of ferrocyanide of potash (yellow prussiate) added. If iron is present, a blue color will be developed of greater or less depth, according as there is more or less iron present. If no iron is present the solution will remain colorless.

Many methods have been proposed for testing an alum directly for the presence of free acid, but in our hands none have proved entirely satisfactory.

For the valuation of an alum then we may proceed as follows: Weigh out 25 grams and dissolve in about 200 c.c. of warm water. When all is dissolved, filter from any insoluble matter into a 500 c.c. measuring flask and wash the residue on the filter thoroughly with hot water. This residue dried, ignited, and weighed, gives the insoluble matter in the 25 grams taken.

The filtered solution is next made (after cooling) to 500 c.c. and well mixed. One hundred c.c. of this solution, equivalent to 5 grams of the alum, are again made to 500 c.c. (solution No. 2).

One hundred c.c. of the latter (solution No. 2), equivalent to 1 gram of the alum, is taken for the estimation of total sulphuric acid present by precipitation with barium chloride.

One hundred c.c. of solution No. 2 is also taken for the determination of alumina. This is diluted to about 400 c.c. in a beaker, and some ammonia chloride solution added. It is then heated nearly to boiling and ammonia solution added, drop by drop, until the smell of ammonia can just be distinctly detected in the solution. It is then heated to just below the boiling point for some time, until the odor of ammonia can no longer be detected in the solution. The volume of the solution should be kept nearly the same by the addition of hot water from time to time as the solution evaporates. This treatment precipitates all the alumina as well as all the sesquioxide of iron present in the form of the hydrated sesquioxides of alumina and of iron, a very bulky, gelatinous precipitate, white if no iron is present, but more or less colored if iron is present. The precipitate should be allowed to settle and the clear liquor carefully decanted through a good-sized filter. Water is added to the precipitate in the beaker and brought to a boil. It is again allowed to settle, and decanted through the same filter as before. The boiling up with water and decanting is best repeated a second time, and finally the precipitate is transferred to the filter and washed thereon with hot water until a drop of the washings gives at most only a very slight cloud when tested on a glass with a drop of silver nitrate solution.

The precipitate is then dried thoroughly in the water oven, separated as completely as possible from the filter and ignited in a platinum crucible tightly covered. Care must be taken to have the precipitate thoroughly dry before igniting, and to keep the crucible tightly covered until the substance is raised to a full red heat. The crucible is then allowed to cool, and the filter added, folded up and again ignited—first with the cover on until all inflammable vapors cease to appear, and then with access of air until the carbon of the filter is entirely consumed. It is then cooled in the desiccator and weighed covered. The weight of the precipitate gives the weight of the alumina, Al_2O_3, and sesquioxide of iron, Fe_2O_3, in 1 gram of the sample.

To obtain the amount of alumina, the iron oxide must be separately determined and its amount deducted from the total weight of precipitate, $Al_2O_3 + Fe_2O_3$, as found above.

To find the amount of iron oxide present, we may take 100 c.c. of the original solution above, equal to 5 grams of the sample. This is transferred to a flask holding 200 or 300 c.c., and fitted with what is known as a Bunsen or Krooning valve. This consists merely of a rubber stopper for the neck of the flask, through the centre of which is slipped a short piece of glass tubing extending just through the stopper below and about 1 inch above the stopper.

To the upper end is fitted a piece of rubber tube about 1 inch in length, which has had a short slit cut in one side with a sharp knife, the upper end of the rubber tube being stopped with a bit of glass rod. This valve will open to relieve a pressure from within the flask, but will not admit air into the flask. Some pieces of pure iron free zinc are added to the solution in the flask, and enough sulphuric acid to cause a moderately rapid evolution of gas.

The stopper fitted with the valve as above is then inserted, and the whole allowed to rest for an hour or two, taking care to keep up the evolution of gas during the time by the addition of zinc or acid as may be needed. The solution is then transferred to a large beaker and the flask rinsed in, taking care not to leave any undissolved bits of zinc behind.

A solution of permanganate of potash is then dropped in from a burette drop by drop, with constant stirring, until a faint pink tint remains in the solution. The number of cubic centimetres of permanganate solution is then read off, and the equivalent amount of sesquioxide of iron, Fe_2O_3, ascertained by multiplying by the appropriate factor.

The permanganate solution is made of appropriate strength by weighing about 3 grams of the crystallized permanganate of potash and dissolving in water to make 1,000 c.c.

To obtain the value of this solution in terms of iron, Fe, we may dissolve about 0.200 grams of fine piano wire by warming with a mixture of 3 volumes of water and 1 volume of sulphuric acid in a small flask fitted with a Krooning valve, as described above.

When all is dissolved except some bits of carbon, the whole is transferred to a large beaker with 500 or 600 c.c. of water and titrated with the permanganate solution as above, until a pink color remains. Piano wire we may take as containing 99.7 per cent. of iron, Fe. Then, if we have dissolved 0.200 grams we shall in reality have a solution of $(0.200 \times 0.997 = 0.1994)$ 0.1994 grams of iron. Suppose this to have consumed or decolorized 20 c.c. of permanganate solution. Then 1 c.c. of permanganate will be equivalent to

$$\frac{0.1994}{20} = 0.00997 \text{ grams of iron, Fe,}$$

or 0.014243 grams of Fe_2O_3.

$$\begin{matrix} 2\,Fe & Fe_2O_3 & Fe & Fe_2O_3 \\ 112 & : & 160 & = & 0.00997 & : & 0.014243 \end{matrix}$$

The value of the permanganate solution must be determined each time directly before using, as it is apt to lose strength by keeping, with the formation of a brown precipitate. The solution of iron should always be tested before titrating by removing a small drop from the flask by means of a rod and bringing it in contact with a drop of a solution of potassium sulphocyanide, placed on a white surface, as a porcelain dish. If any reddish color appears at once, the iron has not all been dissolved to proto-sulphate, as is necessary before it can be titrated. The remedy is simply to allow it to remain longer in contact with zinc in the act of evolving hydrogen. When the reduction from the ferric to the ferrous condition is complete, the solution will give no red color with sulphocyanide solution. Certain "patent" or "concentrated" alums are met with, which contain a small percentage of zinc sulphate. This is formed from the use, at a certain stage of the manufacture, of zinc for the double purpose of neutralizing free acid and of rendering the alum more porous and consequently more easily dissolved.

A qualitative test for the presence of zinc may be made by adding an excess of ammonia solution to a moderately concentrated solution of the alum, heating to boiling and filtering from the alumina (and iron oxide) precipitated. The clear filtrate is then heated to boiling and a little ammonia sulphide solution added. If zinc is present, it will appear as a white flocculent precipitate, which on boiling for a few moments will readily settle.

When zinc is present in an alum the iron may be determined as above; but for the estimation in alumina we must precipitate it along with the iron present as basic acetate of the sesquioxide, instead of the hydrate, as in the former case.

To this end the solution must be largely diluted—about 1 gram of alum in 500 c.c. is proper. To the solution about 2 grams of acetate of soda are added, and a few drops of acetic acid. The solution is then heated to boiling, and kept in active ebullition for ten to fifteen minutes. By this means all the alumina and sesquioxide of iron are precipitated as basic acetates, while the zinc remains in solution. The precipitate is allowed to settle, and the liquid decanted through a filter as rapidly as possible. The precipitate is boiled up with water two or three times, allowed to settle, and the liquid decanted each time; and finally the precipitate is thrown on the filter and the washing completed with boiling water, best containing a very little ammonium acetate. The filtrate and washings are to be evaporated to a moderate volume—say to about 200 c.c.; and if any precipitate separates during the concentration, as will usually be the case, it is to be filtered off, washed, ignited and weighed with the main basic acetate precipitate.

The alumina precipitate is to be dried and ignited as above, and weighed as $Al_2O_3 + Fe_2O_3$. From this weight the weight of the Fe_2O_3, found by titration with permanganate as above, is to be deducted, and the remainder will be the alumina present in the 1 gram of alum taken.

The filtrate from the basic acetates of alumina and sesquioxide of iron is to be neutralized as nearly as possible with ammonia, heated to boiling, and ammonium sulphide added drop by drop so long as it continues to produce a precipitate. The boiling is to be continued for about fifteen or twenty minutes. The zinc sulphide is then allowed to settle, which it will do very rapidly. The clear liquor should then be tested with a single drop of ammonium sulphide. If this produces no cloud, the liquid may be filtered and the precipitate washed thoroughly with hot water.

If the addition of a drop of the reagent produces a precipitate, the liquid should be again boiled and tested, and so on until the reagent fails to give any further cloud in the solution.

The zinc sulphide is to be dried, removed as far as possible from the filter into a porcelain crucible, the filter added, and ignited with free access of air, gently at first, and finally as strongly as possible, with the addition now and then of a small piece of ammonium carbonate. The ignition should be continued until on cooling and weighing two consecutive weights are obtained alike. The strong ignition changes the zinc sulphide into zinc oxide, ZnO, and it is weighed as such.

In the foregoing we have constantly used the word "alum," but have really been describing the analysis or valuation of alum cake. The method for the technical valuation of each is the same, however, so that a single description may serve for the whole class of sulphates commercially known as alums.

Numerous methods have been proposed for the determination of free acid in alums, but after giving them an extended trial in our laboratory we have failed to find one which we can accept as even fairly accurate. Where this important point must be determined, we can, therefore, only recommend a complete analysis.

One of the most satisfactory tests to which an alum for paper makers' use can be subjected is that which we have worked out and called the "sizing test," by which the actual amount of rosin size which a given amount of alum will precipitate is determined. This is effected as follows:

A standard size solution is prepared by dissolving about 25 grams of good ordinary rosin size in about 250 c.c. of strong alcohol. The solution is then filtered from insoluble matter, and diluted with a mixture of 500 c.c. of strong alcohol and 300 c.c. of water to nearly 1,000 c.c. A little phenolphtalein solution is then added, and standard soda solution added drop by drop, shaking after each addition until a faint tinge is observed in the solution. This shows that all the rosin acids are combined with soda, and that the solution is one of neutral resinate of soda or neutral rosin size. The solution is now to be made to 1,000 c.c. with the diluted alcohol mentioned above, and if not entirely clear, filtered again or allowed to stand until it settles clear. The clear alcoholic solution constitutes the standard size solution.

The value of this solution is next to be determined, best by means of a solution of pure crystallized ammonia alum, 1 part of which alum we have found to precipitate 2.46 parts of neutral rosin size.

For this purpose the clear, colorless crystals should be coarsely crushed in a mortar, and the resulting powder pressed between two sheets of filtering paper to remove any accidental moisture. Five grams are then carefully weighed and dissolved to 500 c.c. Each cubic centimetre of this solution will then contain 0.01 gram of alum.

Two burettes are next filled, one with the size solution, and one with the alum solution.

A flask of 150 to 200 c.c. capacity is filled about two-thirds full of water, and 20 c.c. of the size solution is run into it from the burette. The alum solution is next run in, a few drops at a time, the mouth of the flask being closed with the thumb and the flask vigorously shaken after each addition of alum, and allowed to rest until the flocculent precipitate formed has risen clear, which takes but a few moments. The addition of the alum solution should be continued until the precipitate on rising leaves the solution entirely clear, without the slightest trace of milkiness or opalescence.

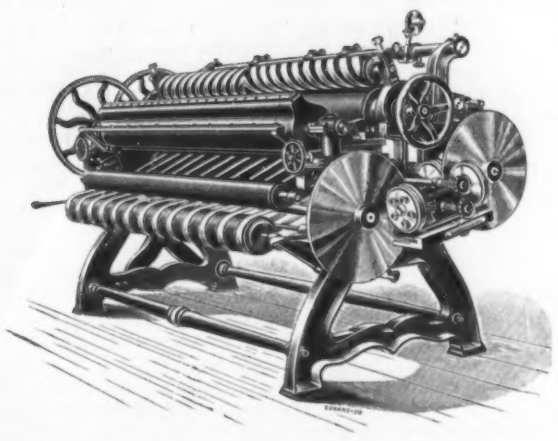
The number of cubic centimetres of alum $\times 0.01$ equals the amount of ammonia alum required to precipitate the size in the 20 c.c. of standard size employed. This multiplied by the factor for ammonia alum, as above, equals the quantity in grams of neutral size in 20 c.c. of the standard solution.

The actual test of an alum is performed in exactly the same way, a solution of 5 grams of the alum to 500 c.c. being employed, and, if necessary, filtered through a dry filter before titrating; 20 c.c. of the standard size solution are always employed, and the actual amount of neutral size it contains having been determined as above, it is easy to calculate from the data given by the titration the amount of size which one part of the alum tested will precipitate.

This test, as is evident, gives the absolute precipitating power of the alum, and does not discriminate between sulphates of alumina, iron or other metallic oxides which may be present, or free acid, all of which have the power of precipitating size.

One other test as applied to alum should, however, be noticed before leaving the subject, and that is the determination of moisture. This, in the case of alums, cannot be determined, as in most instances, by drying or igniting a sample and noting the loss which it sustains. Mere drying, even at a temperature considerably above 100° C., is not sufficient to expel all the moisture from an alum, while ignition drives off not only the water, but a portion of the sulphuric acid as well. To determine the moisture in this case, then, it is necessary that we ignite the sample, best in a platinum crucible until fumes of SO_3 appear in abundance; then cool and weigh, and note the loss. We next treat the ignited sample with hot hydrochloric acid, until all lumps are broken down. If the ignition has not been too intense or prolonged, all will dissolve. It does not matter, however, if all does not dissolve, provided it is well broken down, so as to make sure that all soluble portions are brought into solution. The solution is filtered and the residue well washed on the filter with hot water. The filtrate and washings are next precipitated with barium chloride, and the sulphuric acid determined. The per cent. of SO_3 here found, deducted from the total SO_3 contained in the sample, as determined above, leaves the percentage of SO_3 driven off by the ignition. This taken from the total loss of weight, by ignition, in per cents., leaves the percentage of moisture in the sample.—*Chemistry of Paper Making.*

The firm of J. C. Wilson & Co., paper manufacturers, Lachute, Que., celebrated its twenty-fifth anniversary on August 17. In honor of the occasion J. C. Wilson provided a special train to take all of the employees of the house at Montreal to Lachute, where they were met by the mill hands and spent a pleasant afternoon on the Argenteuil Exhibition grounds. The visitors were shown through the mill buildings, where the process of paper making was explained to them, and at noon were served an excellent dinner; dancing and games followed, and then there was a supper, after which the party enjoyed a display of fireworks at the mill and a short address by Mr. Wilson, who expressed lively satisfaction at the mutual good feeling existing between the Lachute and Montreal employees. The speaker pointed with pride to the kindly feeling shown by the owners of other mills in closing their establishments in order that their men might attend the games. This eulogy brought forth three cheers and a tiger for the proprietors of the mills.



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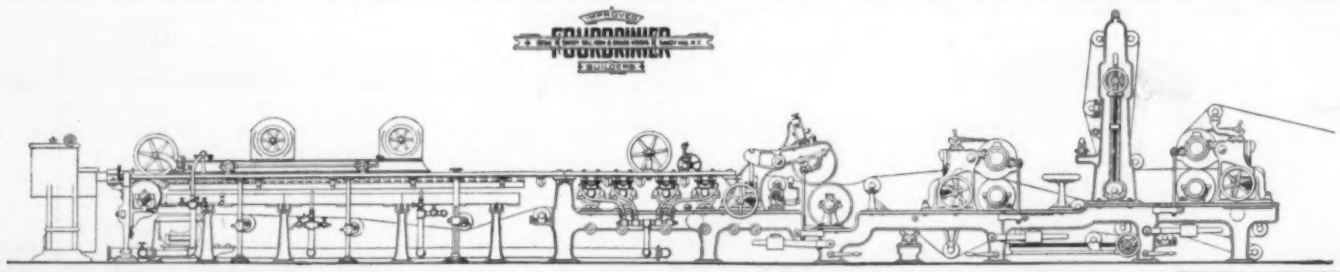

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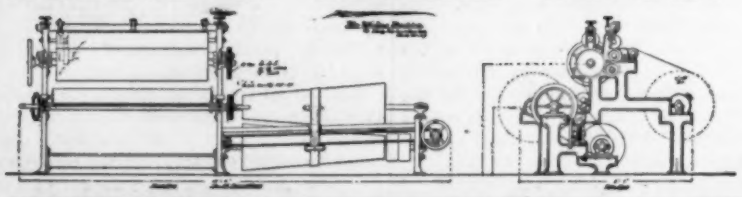

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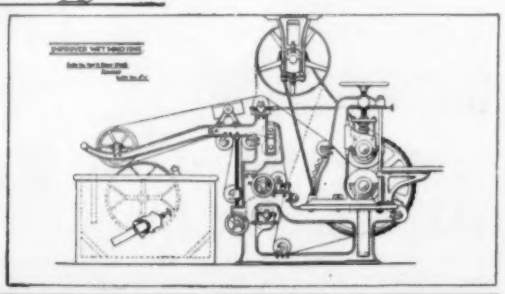

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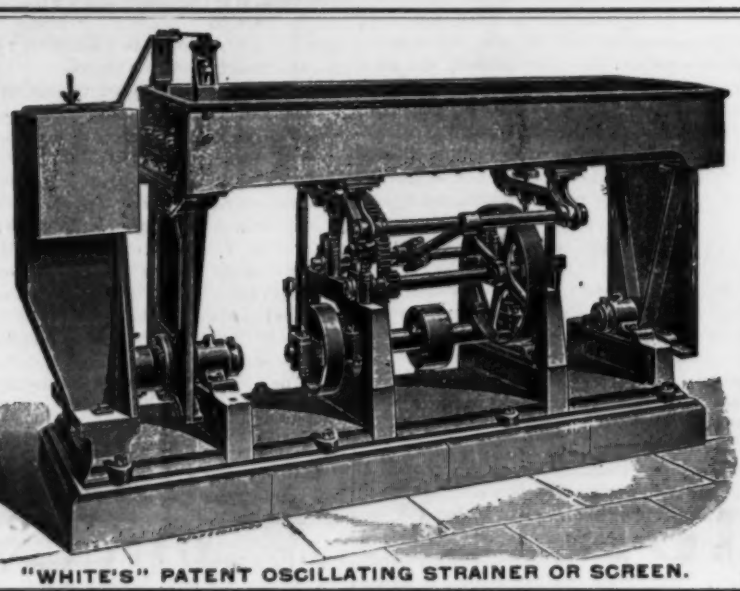

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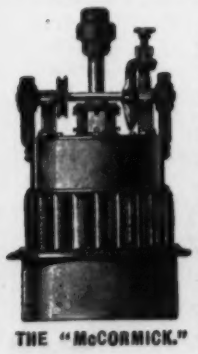

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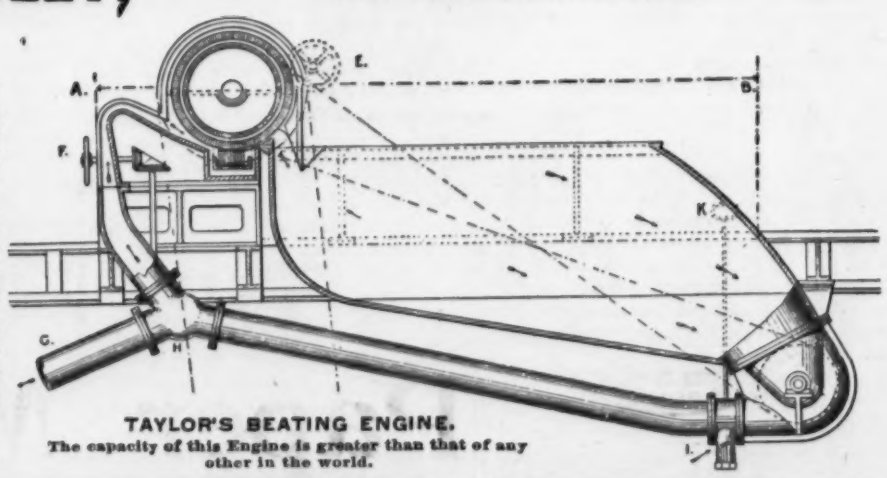

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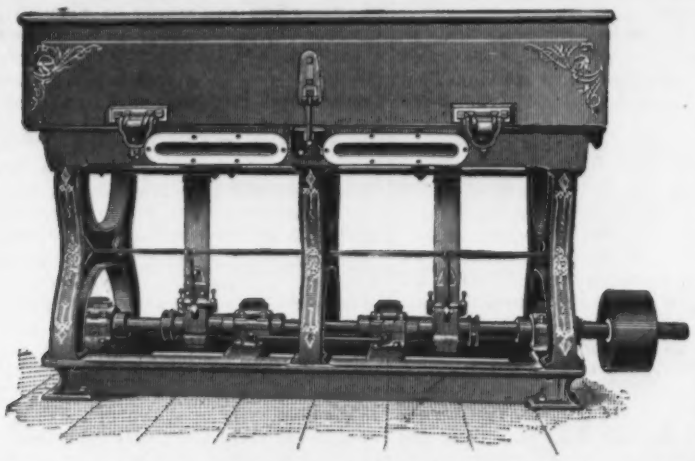

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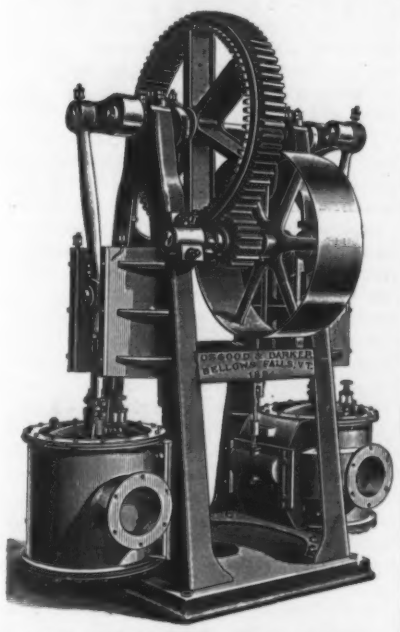

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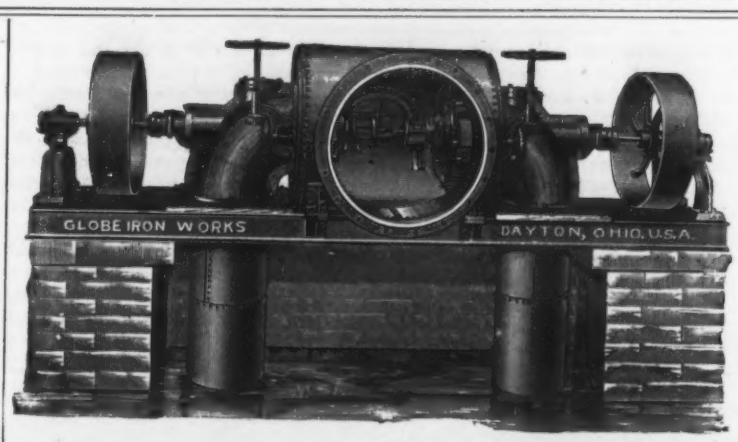

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Whole Gate,	16.06	119.17	141.58	205.27	79.76	Whole Gate,	16.33	138.00	134.18	199.56	80.50
¾ "	16.42	122.00	127.18	195.19	82.58	¾ "	16.56	134.80	120.85	188.14	83.09
½ "	16.78	117.33	112.60	175.74	82.18	½ "	16.59	129.33	104.85	162.89	82.77
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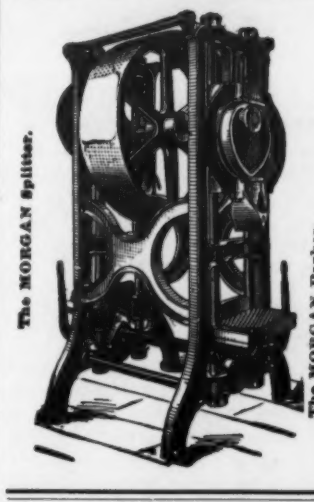
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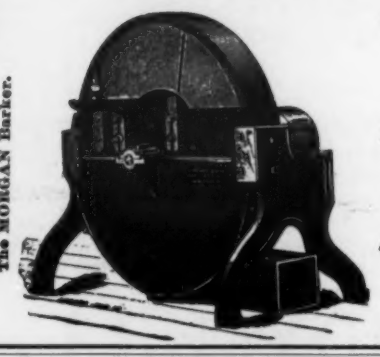
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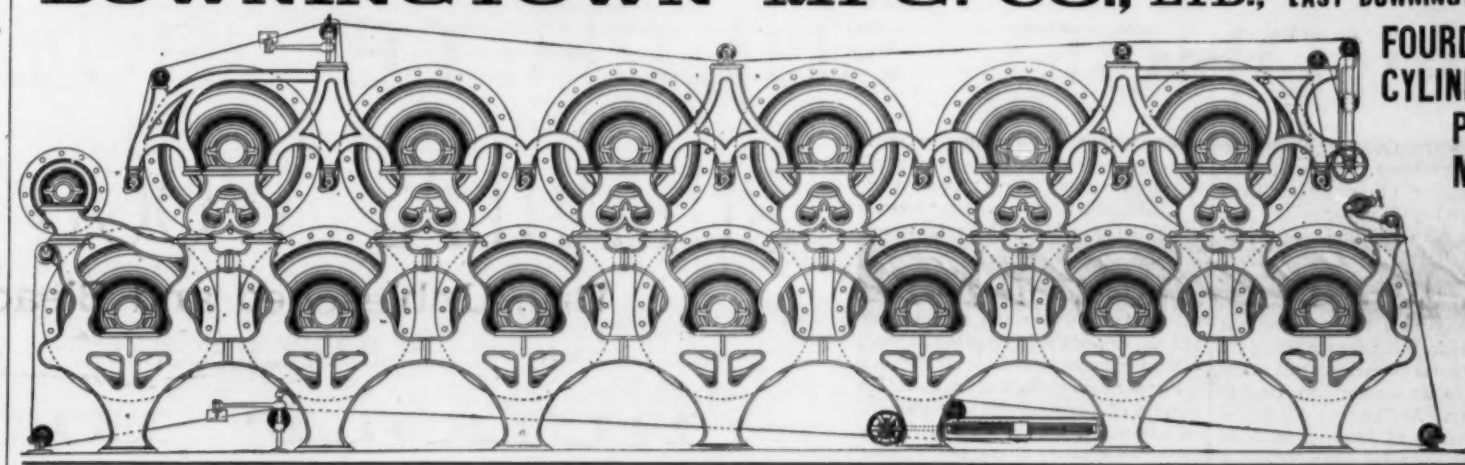

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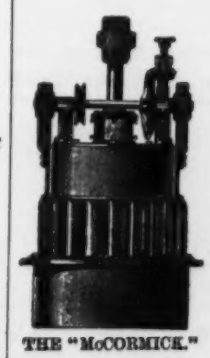
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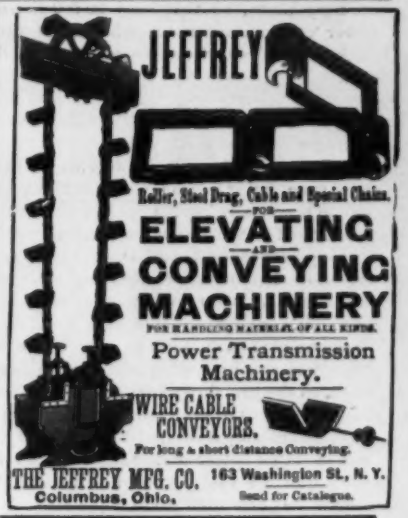
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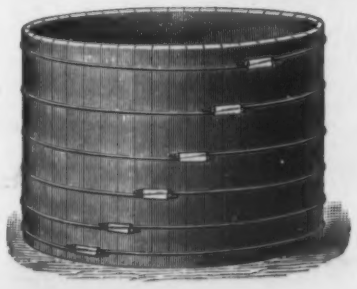

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Cost of Steam Power.*

By Chas. E. Emery, Ph. D.

In connection with the proposed supply of power in large units from Niagara Falls and other undertakings of a similar character, the question naturally arises: What would be the cost of steam power if also supplied in large units and generated with modern machinery of the most approved type? The question would be a simple one if it involved only the amount of coal consumed at a definite price, and the labor required to handle the coal and attend to the machinery. It is very common to compare the value of two engines simply by the relative amount of coal consumed, assuming that other costs incident to the development of the same power will be the same in all cases. Even if the assumption be substantially correct, it has a more important bearing on the result than appears at first sight. The cost of coal is for ordinary engines of moderate size only about one-third of the total cost of steam power, so, if the other costs remain nearly constant, moderate savings in the cost of coal will not proportionally decrease the cost of the power.

In large plants, operated nearly at full capacity, the best types of steam machinery can be profitably employed, the cost of superintendence will be reduced, and the cost of labor required for operation materially decreased. The decrease in labor depends largely on the size of steam unit it is found practicable to employ. Triple compound engines of 10,000 to 15,000 horse power each are used quite successfully in our large ocean steamers, but it is considered that these units are altogether too large for the problem we are considering.

Any supply of power must be adapted to the nature of the demand, which for most industrial operations is variable, and it is desirable to make the steam units of such size that one or more of the same can be grouped together to carry the load at any time without either overloading or greatly underloading either of such units. In a large plant, upon which presumably many different manufactories depend for power, there should be a spare unit which can be used in case of accident, and ordinarily employed in regular turn, so that all the machinery can be kept in repair.

It will thus be seen that the size of the unit is limited by the conditions above stated. If 20,000 horse power as a maximum were to be delivered, two units of 10,000 horse power each would do the work, but evidently the spare engine would require also to be 10,000 horse power, and this would involve too large an amount of capital in spare machinery. At Niagara Falls five connected turbines and dynamos of 5,000 horse power each are being erected in a preliminary plant, so that only 20,000 horse power maximum can be delivered if the principles above outlined are strictly carried out, though evidently contracts can be drawn to provide that the power may be stopped in case of accident, the same as in a private establishment, and thereby all the wheels and engines put in service at the same time, but it is probable that one unit will be practically kept in reserve and more units added as the demand warrants. With steam power there would be some advantages for a 20,000 horse power plant in adopting a unit of 2,500 horse power, on which basis with one spare unit of this size there would be nine such units in all. There is an advantage in having all the engines alike, as the parts required for repairs are then duplicates of each other, the units can be more suitably arranged in the building and the labor better distributed. When it could be done without too much detail, it would be desirable to couple together several engines of 2,500 horse power each, so that they would be capable also of independent operation. Another method would be to disregard absolute uniformity when so much power is to be delivered and have several duplicates of two different units, say one of 2,500 horse power and another of 5,000 horse power, which would either require the size of the spare engine to be increased, or that the other engines be slightly overworked in case of accident. For simplicity, however, all the costs will be assumed alike with either arrangement.

The average cost per 100 pounds when the load is variable is considerably greater than if the power be furnished continuously. Coal is wasted in building up the fires and in caring for them when not required; all supplies are increased from the necessity of starting anew after every stoppage, and there is an important loss due to the interruption of the regular hours of labor. A sufficient force must be kept on hand at all times to provide for any demand, and the watches of the men arranged in some practical way, so as to proportion the labor to the work to be done as nearly as possible.

It is desirable at the outset, however, to ascertain what steam power will cost under the most advantageous conditions as to demand, and we therefore submit a preliminary estimate based on the assumption that 20,000 horse power can be sold for every hour in the year. The details of the estimate are discussed afterward.

Table I. *Showing cost of steam power on basis of generating 20,000 horse power continuously every hour in the year.*

		Per Cent. of total Cost.
Yearly cost of coal for 20,000 net horse power operated continuously every hour in the year, based on a consumption of 1.25 pounds of coal per indicated horse power per hour. Cost of coal assumed at 1 mill per pound or $2.24 per ton. Engine efficiency assumed at 92.3 per cent..	$237,250	43.4
Estimated cost of labor.....	60,444	11.1
Estimated cost of supplies and regular repairs.....	105,120	19.2
Estimated interest, insurance, taxes and cost of renewals.....	144,000	26.3
Total.....	$546,814	100.0

Which divided by 20,000 gives the following:

Cost of steam power per horsepower per year on basis of 20,000 horse power delivered every hour in the year.....	$27.34
Cost of steam power per horse power per year on above basis, if 5 per cent. of the original cost of plant, be charged for dividends, and $1 per horsepower added for general business expenses.....27.34+3.60+1=	31.94
Cost of steam power per horsepower per year on above basis, if 10 per cent. of the original cost of plants be charged for dividends and $1 per horsepower added for general business expenses.....27.34+7.20+1=	35.54

This cost is, for reasons which will be discussed later, lower than it is probable any plant can be operated under commercial conditions. This price is somewhat higher than those given in the papers previously mentioned, simply because operation is supposed to be continued every hour in the year.

The cost of coal above outlined is derived as follows: The best triple compound engines have developed a horse power for a little less than 12 pounds of water per horse power per hour, and boilers have been constructed which at actual pressure from actual temperature of feed, evaporated 10 pounds of water per pound of first quality coal. Both these results are under experimental conditions, but we must assume that in a large plant like this all details will be so well attended to that fair experimental results may be obtained all the time. We therefore assume that the power will be produced regularly for 1¼ pounds of coal per indicated horse power per hour, which would be obtained with engines requiring 12½ pounds of feed water per horse power, if the boilers evaporated 10 pounds of water per pound of coal, or if the boilers evaporated 9.6 pounds of water per pound of coal, and the engines only required 12 pounds of water per horse power per hour.

For permanent work of the kind assumed, engines of comparatively slow speed should be selected, and, although some of the work might be directly connected, part of it at least would necessarily be operated by some method of transmission. The frictional losses of the engines and the more important features of transmission to the work done have been assumed at 7.69 per cent., so that the amount of coal per indicated horse power above assumed must be increased by one-twelfth to give the coal per net horse power.

The cost of coal per ton varies greatly in different parts of the country. The actual cost of mining bituminous coal is as low as 25 cents per ton in some locations, and the coal can be delivered on the cars at a good profit at 50 cents per ton. At deep mines the cost of mining is greater, but in all cases the principal cost of coal is the transportation, which has been reduced from time to time by increasing the size of the coal cars and the weight of the train and by reducing the grade in the direction of traffic, until it is credibly stated that coal can be hauled on the main trunk lines at a profit for one-half cent per ton per mile, thus adding only 50 cents per ton for each 100 miles of haul. The lateral roads, with undulating grades, cannot haul coal at as low a rate as this. There is, moreover, to be added the general selling expenses, so it has been assumed that along the lakes, although comparatively near coal mines, the best quality of coal will cost but little over $2 per ton if purchased in large quantities, though this price must be increased on the seaboard fully 75 cents, and for ordinary consumers of course much more. The price upon which comparison has been made is 1 mill per pound, or $2.24 per ton, to include the cost of delivery directly in front of the boilers. The cost is derived simply by multiplying the net power, 20,000, by 1¼, the coal per indicated horse power, adding 1-12 to allow for friction, and multiplying the result by 8,760, the number of hours in the year, and $0.001 the price per pound. The next item, labor, is made up as follows:

Without attempting to arrange watches it is assumed that on the average there would be required in such a station at all times

One attendant for each 2,500 horse power engine, or eight men in all, at 25 cents per hour.....	$2.00
Fourteen firemen and three additional men at the same pay, to care for pumps, &c., and to keep the premises clean; total, seventeen men, at 20 cents per hour.....	3.40
Total cost of labor per hour.....	$5.40

There would also be required a chief engineer, three assistant engineers and some clerical help, which under the head of superintendence would cost, say, $13,140 per year, or $1.50 per hour, making a total of $6.90 per hour. The total cost for labor and superintendence for one year of 365 days or 8,760 hours, at $6.90, is $60,444.

The cost of supplies and repairs in connection with the boilers and large condensing engines in the cotton mills of Fall River proved upon investigation several years ago to be approximately eight-tenths of a mill per horse power per hour. With the hope that this cost can be reduced in an immense plant of this kind the quantity has been extended on the basis that the cost will be only six-tenths mill.

20,000 horse power × 8,760 hours × $0.0006 = $105,120.

The above estimates only provide for regular repairs. Independent of this a certain percentage of the first cost should be put at interest every year to provide for renewals of the machinery, and provision made also for paying taxes and insurance. Calling these three 5 per cent. of the cost, and considering that a company which can build so large a plant can possibly borrow money at 5 per cent., 10 per cent. of the total cost will be required for these several items.

The total cost of such a plant cannot be determined accurately in advance. The present prices for steam machinery are very low and it might be possible to buy engines of the best type with necessary boilers, ready for erection, for $30 per horse power. To this price, however, must be added the cost of the land upon which the plant is to be erected, the cost of foundations, of erection, of the buildings, of the chimney, the pipe connections, the general means of transmission, and the multitude of minor details required for fitting up such a place ready for use. The probable cost has been fixed at $64 per horse power, and as at least one-eighth surplus power will be put in the station there will be required a steam plant of 22,500 horse power, which at $64 will cost complete $1,440,000.

We find that the cost of steam power per horse power per year, on the basis of 20,000 horse power delivered every hour in the year, is $27.34. The price at which this power can be sold to consumers will depend upon the way the company furnishing the power is organized. The interest on the cost is already provided for, so that the net cost given—viz., $27.34—would be that chargeable to power if the same company that built the works used the power, or if an association of individuals should build the plant and simply charge themselves with its cost.

If, however, a private company with ample means should build the plant on a cash basis and wish to sell power and realize a return of 5 per cent. on first cost, independent of interest on the money invested, the modified cost would be $27.34 plus 5 per cent. of ($64×1½=$72). Viz., $3.60, to which should be added, say, $1 per horse power for general business expenses, making the total charge $31.94, the same method being used in Tables II. and III.

If, however, the promoters desire 10 per cent. profit on original cost or a proportionally less percentage on stocks and bonds issued in excess of first cost, the modified cost per horse power per year would be $27.34 plus 10 per cent of $72, viz., $7.20, to which adding $1 per horse power as before for general expenses gives as the total charge under these conditions $35.54, the method applying to Tables II. and III. as before explained.

We are now prepared to ascertain the variation in result which would be produced the power were considered variable. For this purpose let us assume there will be sold:

	Daily Horse power Hours.
20,000 horse power, 10 hours per day.....	200,000
12,000 horse power, 10 hours per day.....	120,000
5,000 horse power, 4 hours per day.....	20,000
Total daily horse power hours.....	364,000

which would probably be required on say 309 working days in the year.

Total horse power hours, 309 days.....	105,060,000
Then if 5,000 horse power were required for the remaining 56 holidays in the year:	
Total horse power hours, 56 days of 24 hours, 5,000 horse power.....	6,720,000
Total horse power hours per year....	111,780,000

Average horse power per hour during the year:

Previous result + 8760 = 12,760 horse power.

The average horse power is therefore 63.80 per cent. of the maximum. This percentage is frequently termed the "power factor," and is rather higher than has been found in practical cases heretofore. An estimate of the cost on this basis will be given in advance as before and explained afterward.

Table II.—*Showing the cost of steam power on basis of generating 20,000 horse power maximum, and an average of 12,760 horse power for every day in the year.*

		Per cent. of total cost.
Yearly cost of coal.....	$157,644	37.3
Estimated cost of labor.....	47,652	11.3
Estimated cost of supplies and regular repairs.....	73,584	17.4
Estimated interest, insurance, taxes and cost of renewals.....	144,000	34.0
Total.....	$422,880	100.0

Which divided by 12,760, the average horse power gives the following:

Cost of steam power per horse power per year on basis of delivering 20,000 horse power maximum and an average of 12,760 horse power for every day in the year.....	$33.14
Cost of steam power per horse power per year on above basis if 5 per cent. of the original cost of plant be charged for dividends and $1 per horse power added for general expenses..... 33.14+3.60+1.00=	37.74
Cost of steam power per horse power per year on above basis if 10 per cent. of the original cost of plant be charged for dividends, and $1 per horse power added for general expenses..... 33.14+7.20+1.00=	41.34

The cost of coal is made up as follows: It will be seen that 15,000 horse power of boilers out of 20,000 must be shut down daily for periods varying with the demand, and it is considered that it will require an amount of coal equal at least to the average consumption for one hour during regular operation, to maintain banked fires, overcome radiation and bring the fires to average working condition when they are again put in operation. The total daily horse power hours is therefore increased 15,000 and multiplied by 309; the horse power hours for the fifty-six holidays are then added to the same; the sum multiplied by 1.25 pounds of coal per horse power and by one mill per pound and one-twelfth added to the whole for friction, which gives the result.

The labor cannot be distributed accurately until the variations of loading are developed practically. On any definite basis the watches could be arranged so that there would be little loss of time, but in practice there would be a variation of load at the same hour on different days. For instance, with the electric lighting part of the load the demand would vary with the weather; with the cable or electric railroad portion of the load the demand would be greater on particular days and seasons, and vary also somewhat with the weather, so to be provided for unexpected demands there must be a surplus of labor. Such surplus will be assumed at 20 per cent. for the fourteen hours of reduced power per working day, equivalent to labor for 28,000 horse power hours per day, or 8,652,000 horse power hours for 309 days. Adding only 10 per cent. for 56 holidays gives 6,720,000×1.1= 7,392,000 horse power hours. Adding both to the total horse power hours, viz., 111,780,000, gives a total for the year of 127,824,000 horse power hours, which at $0.00027 per horse power hour ($5.40÷20,000) gives:

Cost of labor per year.....	$34,512
Cost of superintendence per year.....	13,140
Total for labor and superintendence per year.....	$47,652

The cost of labor and superintendence above is 100×$47,652÷60,444=78.83 per cent. of that required for full operation throughout the year, although the average power developed is only 63.80 per cent.

The cost of supplies and regular repairs will be somewhat greater proportionally than for continuous operation, and is estimated to be 70 per cent. of the similar costs, $105,120×0.70=$73,584.

Evidently the interest, insurance and taxes embodied are not modified, and the percentage allowed for renewals is so small as not to materially affect the result.

A recipe for covering pulleys with leather or paper is given in the *Indian Engineer*. Spread over the metal a thin hot solution of glue. Soak or sponge the leather well with a warm solution of gallnuts before placing it on the metal. Press down firmly and let dry. Cemented in this way, leather will tear before it can be separated from the metal. Split leather is fully as good as, if not better than, any other kind. Paper may also be used to cover a pulley and fastened in the same manner.

*Presented at the meeting of the American Institute of Electrical Engineers, Niagara Falls, N. Y., June 26, 1895.

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Incrustation.

Water is rarely found pure, *i. e.*, not holding foreign substances in solution. Consequently when water is poured into a vessel placed over a fire, and is boiled until it all escapes as steam, we shall find on the bottom and sides of the vessel a coating or deposit which, if hard, we call incrustation or scale; but if it is in the form of a powder we call it sediment. Sometimes, also, the water holds mineral matter in a state of mechanical suspension.

Fatty matters, introduced with the feed water, sometimes cause a very troublesome—a soapy—deposit.

The substances more generally found in solution in water are the carbonates of lime and magnesia, sulphate of lime, chloride of magnesia, with traces of silica, alumina and iron.

Incrustation and sediment in a boiler cause waste of fuel, are a source of danger and are oftentimes expensive to remove.

Water can be freed from substances held in mechanical suspension by filtration, but it is often both difficult and expensive to remove those chemically combined with it.

Heat is the only agent by which all the matter held in solution can be removed from the water.

From 10 to 40 grains of mineral matter per gallon of 231 cubic inches are held in solution by the water of rivers, streams and lakes; well and mine waters contain more.

Since water contains all the incrustating ingredients found in boilers, having been the means of conveying them there, it will be well to treat of its composition and properties.

Water is composed of two gases, hydrogen and oxygen; in proportion, by weight, of 11.1 parts of hydrogen and 88.9 parts of oxygen.

Water, when pure, is transparent, colorless, tasteless, odorless, and is a bad conductor of heat. Under a pressure of 30,000 pounds to the square inch fourteen volumes of it may be condensed into thirteen volumes, so that it is slightly elastic. It is 815 times heavier than atmospheric air, an imperial gallon (277.274 cubic inches) weighing, at 62° Fahr. and under a barometric pressure of 29.92 inches, 70,000 grains, or 10 pounds avoirdupois; but as it is the standard to which the gravities of solids and fluids are referred, its specific weight is called 1.

Water contracts and becomes denser in cooling until it reaches 39.2° Fahr., when it has reached its greatest density. Below this point it expands, and at 32° Fahr. it becomes solid or freezes, and in the act of freezing expands considerably. Owing to the expansion ice is lighter than water, it having a specific gravity of 0.916.

Water is expanded by heat between 40° and 212° Fahr., boiling in metallic vessels at the latter temperature when the barometric pressure is 29.92 inches.

The boiling point of water varies according to the pressure. As at a pressure of 29.92 inches it boils at 212° Fahr., so at a pressure of only 27.74 inches it boils at 208° Fahr.

The solvent properties of water far exceed those of any other known liquid. A very large proportion of the different salts are more or less soluble in it, the solubility increasing generally as the temperature rises, so that a hot saturated solution deposits crystals on cooling.

There are a few exceptions to this rule, one of which is common salt, the solubility of which is about the same at all temperatures; the hydrate of lime (slaked lime) is more soluble in cold than in hot water; sulphate of lime is also less soluble in hot than in cold water, and wholly insoluble at 302° Fahr., or between 284° and 302° Fahr. Water also dissolves gases, but a boiling temperature expels all the gas if it be not very soluble. The solvent properties of water are still further increased when heated in a strong vessel under pressure. Water containing carbonate of lime, held in solution by free carbonic acid, boils steadily and is not liable to cause foaming. As the water boils the carbonic acid gradually escapes, the carbonate of lime then being deposited in the insoluble and frequently in the crystalline state. The more slowly it is deposited the more crystalline it will be, sometimes becoming hard like a rock and requiring to be chipped off.

The incrustation generally contains some sulphate of lime, it being less soluble in hot than in cold water. This incrustation gradually eats away a portion of the metal, to which it becomes so tightly fastened that when it is chipped off there will always be found a layer of oxide of iron on that side of the incrustation which was in contact with the metal. The corrosive effects produced by water holding salts in solution take place on the iron of the boiler chiefly, but well water, containing a quantity of soluble salts, acts upon the brass and copper to such an extent that boilers are almost covered in front with incrustations of the salts; of course, greatly injuring and, in some cases, rapidly destroying them.

Incrustation is commonly stated to be a bad conductor of heat, and that any great thickness of it on the plates of a boiler causes a largely increased expenditure of fuel. It is not clearly determined yet whether the increased expenditure of fuel is quite so great as has been claimed, though it is undoubtedly a source of waste.

There are many compounds for preventing incrustation; some are very costly, and none of them are alike applicable to all cases. Some of them increase corrosion of the boilers, while they prevent incrustation, and in the employment of other practical difficulties arise which render their use inconvenient and, at times, even dangerous.

Zinc introduced into steam boilers prevents incrustation, and proves very useful in case of selenitic waters; but, as against the carbonates of lime, magnesia and iron, it is of little value, the zinc being soon rendered brittle and porous, and in a short time reduced to powder.

Zinc has also been used in marine boilers with varying degrees of success. The most important effect, however, obtained from its use is the protection of the plates, &c., from the hydrochloric acid evolved from the chloride of magnesium of the sea water from the boilers of the steamer Rosedale, of Bridgeport, Conn.

Where boilers are already coated with hard scale, its use gradually converts the stony incrustations of the carbonates of lime and magnesia, and even anhydrous sulphate of lime, into pulverulent and flocculent phosphates. It also separates the foreign matter held in solution by the water as a light, flocculent precipitate, which will not bake into a crystalline scale, but is easily removed by blowing off, thus preventing the formation of incrustations; and furthermore it neutralizes acids contained in the water, thus rendering them innocuous.

It is needless to say that its use promotes economy of fuel.

Six specimens of incrustations analyzed by Professor Chandler give as an average composition:

Sulphate of lime	56.49
Carbonate of lime	18 11
Basic carbonate of magnesia	19.77
Oxide of iron and alumina	0.69
Silica	3.81
Organic matter	undetermined
Water	1.62
	100.00

These analyses show that the incrustations consisted chiefly of the carbonates of lime and magnesia and the sulphate of lime.

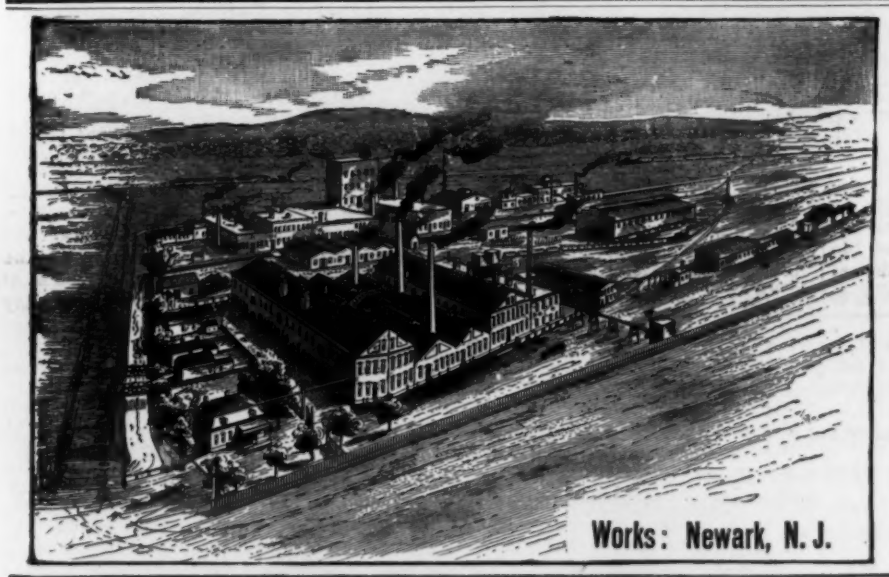
The two carbonates are insoluble in pure water and owe their presence in the waters of springs and rivers to free carbonic acid, which forms with them soluble bicarbonates.

Boiling such waters expels this carbonic acid, and the carbonates of lime and magnesia separate in the form of insoluble powders. Now, if this boiling takes place in an ordinary steam boiler, these carbonates are set free as impalpable powder and buoyed to the surface of the water, where they remain for some time, gradually being carried to the comparatively cooler and quieter parts of the boiler, where they quietly and gradually settle, forming a sludge. Were some suitable means provided, they could be collected at the surface and blown out at intervals without much loss of efficiency to the boiler.

Various alkaline substances, by appropriating the carbonic acid, cause the precipitation of the insoluble carbonates. Potash, soda and ammonia, as well as their carbonates, produce this effect. So that the carbonates may be removed without decomposition by simply depriving them of their solvent, the carbonic acid, and this can be done in tanks, and the purified water fed to the boiler; but the process requires care.

The sulphate of lime is soluble in water, 1 gallon of water being capable of holding 150 grains in solution; but the solubility of the sulphate of lime in water is modified by the presence of other substances. The chlorides of calcium and magnesium, and even a high temperature, diminish, while the chlorides of sodium and ammonium, and various organic substances, increase its solubility. Above 212° Fahr., the solubility rapidly diminishes as the temperature increases, and at 302° Fahr., equivalent to a pressure of 70 pounds per square inch, it may be said to be totally insoluble; and, in fact, at a temperature of 250° Fahr., equivalent to a pressure of 30 pounds, so much of the sulphate of lime is rendered insoluble that the quantity remaining in solution is not practically objectionable.

Sulphate of lime forms a hard, crystalline scale in the absence of carbonates. When the carbonates of lime and magnesia are present, the deposits vary from a loose powder to a hard, crystalline formation, accord-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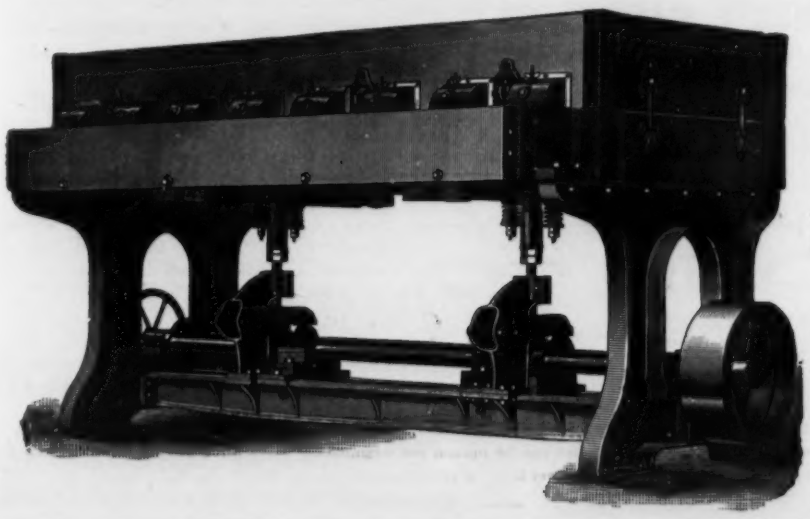

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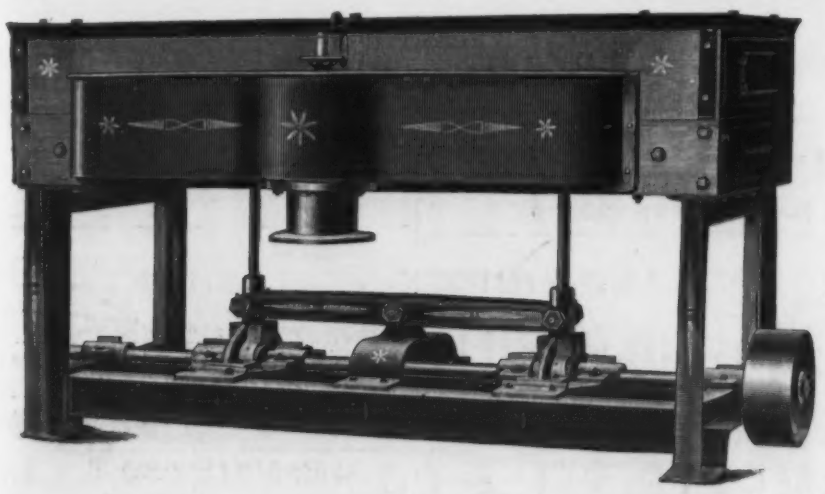

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ing to the proportions of the three substances.

In practice sulphate of lime can only be removed from water by undergoing decomposition. For instance, by carbonate of soda, which forms carbonate of lime, which is deposited as powder, and sulphate of soda, which remains in solution. But when soda is used it is advisable to have some surface blow apparatus fitted to the boiler to avoid trouble from "foaming."

Incrustations are injurious to boilers because:

1. They are poor conductors of heat, and so cause loss of heat; and, as a consequence, waste of fuel. The estimated waste is from 15 up to 40 per centum of the fuel used, dependent upon the thickness of the scale.

2. They cause overheating of the boiler plates, which is sure, sooner or later, to cause a burning out of the metal that may result in an explosion of the boiler.

3. The corrosion of the metal occurs most rapidly in those parts of the boiler upon which the deposits are more liable to accumulate.

So far incrustations due to the deposition of matter held in solution in the water only have been spoken of, as those are by far the most frequent. But it is known that a quantity of fatty matter in the feed water of a boiler causes a deposit, and that this may lead to the destruction of the boiler, inasmuch as the part of the boiler shell under the incrustation becomes more heated than other parts and is apt to occasion rupture.

Several cases have come under the notice of the United States steamboat inspectors where oil, used to lubricate the cylinders, has been carried into the boilers with the feed water, and, settling upon the furnace crowns, has formed a thin, hard incrustation there, which resulted in burning the plates, followed by a crack, necessitating repairs.

There is also found a chemical combination of the fatty acids of the oil with the impalpable powder of the carbonates of lime and magnesia, forming an insoluble soap, which agglomerates and finally sinks to the bottom of the boiler, and, being plastic, closely conforms to the shape of the sheets, thoroughly excluding the water from them, and generally resulting in the formation of "bagging" or "pockets," which will soon burn and crack, and perhaps cause a dangerous rupture.

An instance of this kind was lately discovered by an inspector. The incrustation had a soapy feel, was of chocolate color, and varied from half an inch to several inches in thickness, and the "bagging" of the plates was very pronounced.

There is no doubt that the use of apparatus for collecting the fine particles of minerals, as they are freed from solution by heat, pressure and chemical reactions in the boiler, while they are still near the surface of the water, and then periodically blowing them out, will certainly greatly reduce the amount of incrustation, conducing to economy, and adding to the life and efficiency of the boiler.

Incrustation is a source of danger also, as it clogs the feed and blow pipes, and also the water-legs in firebox boilers. And, again, when a boiler is much incrusted it is impossible to examine so thoroughly as to ascertain the true condition of the plates, joints, rivets, &c. Of course this incrustation must be removed by the use of chisels, picks, &c., which tends to injure and weaken the structure.

In the alkali regions of the United States it is very hard to keep boilers in a passable condition, as the water is strongly impregnated with mineral substances. Accounts are given of the use of kerosene oil for the purpose of removing scale, and apparently with success. But it is an article that must be used with great care and judgment, or the boiler will soon be ruined. Again, as before mentioned, much of the deposit in a boiler lies in the bottom as a sludge, and should be removed from the boiler as such. But when fires are hauled at the end of a week's work, steam blown off, and the water blown out of the boiler, on examining the boiler within twenty-four hours it will be found that the heat of the iron and brick work has baked that sludge into a hard scale, very difficult to remove.—*Engineers' List.*

Covering Steam Boilers.

The subject of boiler coverings as a preventive of heat radiation is a very important one to the engineer. Careful tests have been made from time to time to determine the extent of the loss from this source, and it has in most cases been found to be surprisingly high. The actual loss in any particular case depends upon the conditions surrounding the boiler and boiler room. For stationary boilers the loss is naturally much smaller than for portable and locomotive engine boilers. In these latter it is probable that the loss is very great, but the conditions are such that it has not been found possible to correctly measure the radiation loss.

With the better class of stationary boilers the results have been quite uniform, and it is probable that the average of these results is about 15 per cent. This is the generally accepted figure for this loss in a boiler that is left unprotected, except by the boiler house in which it is located. If we can save any considerable amount of this lost heat we will of course greatly increase the economy of our steam plant, and it is for this purpose that the various kinds of boiler coverings have come into use.

Coverings composed of hair felt and similar organic matter are not to be recommended for use on the boiler, although they have been used for this purpose. They have generally been found to be unsatisfactory, for the reason that the high temperature to which they are exposed is liable to result in their decomposition, rendering them useless for the purpose for which they were applied.

There are now on the market many plastic coverings that are easily applied and are entirely satisfactory. Most of these are excellent non-conductors of heat, while many of them serve as a protection to the boiler against corrosion. Some of these materials, however, are found to contain sulphur, which is apt to attack the iron, sometimes to a serious extent.

In locomotive practice it has been customary to apply wood lagging to the surface of the boiler at every point where it is exposed to the action of the weather and to cover this with a sheathing of Russia iron. In most cases, but not always, an air space is left between the boiler and the lagging, and there can be no doubt of its advantages. It is better, however, to fill this space with some non-conducting material, such, for instance, as plaster of paris. Sheets of asbestos are also used with great advantage.

It is not uncommon to see boilers entirely covered with some plastic non-conducting material, and sometimes the furnace is surrounded with the same substance. No engineer would think of installing steam piping without covering, and the time is fast coming when every steam boiler will be similarly protected.—*Industrial Record.*

If you find that your draft is poor some morning, look around the boiler setting and see if some of the doors have not been left open accidentally, or perhaps been blown open by an explosion of coal gas.

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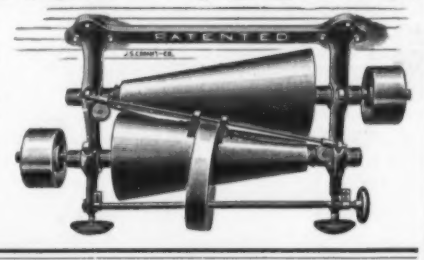

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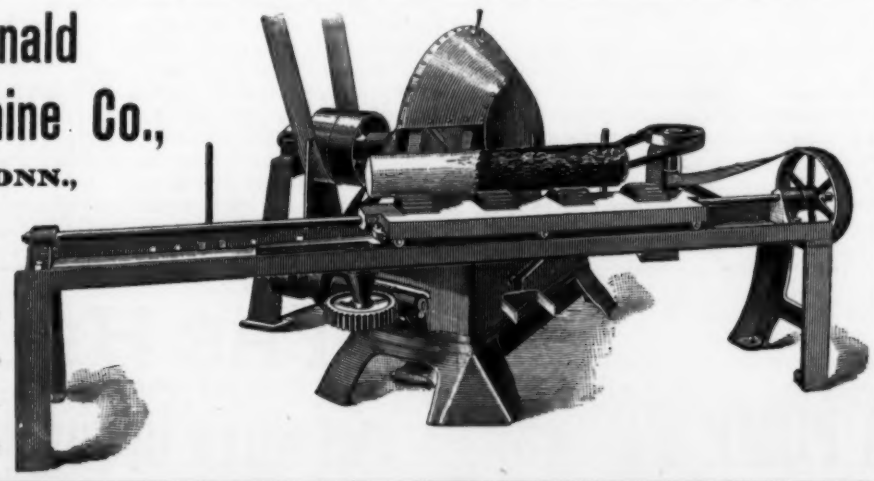

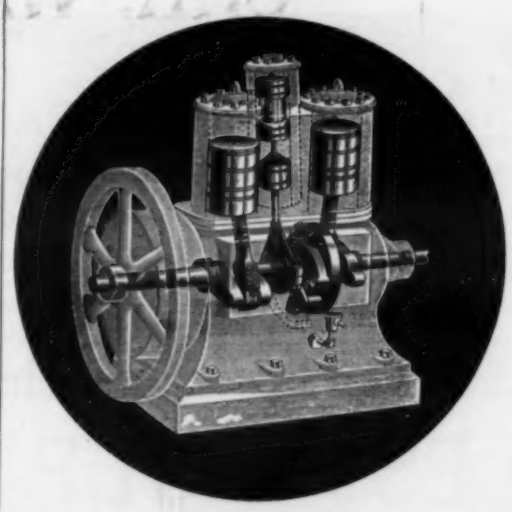

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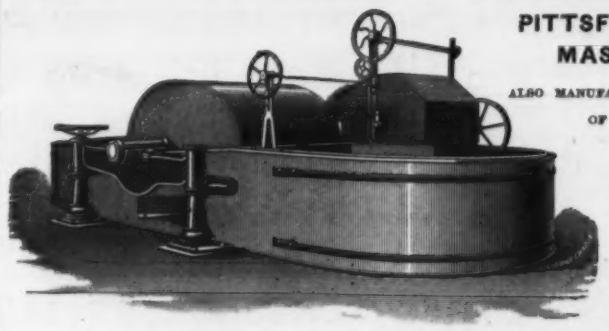

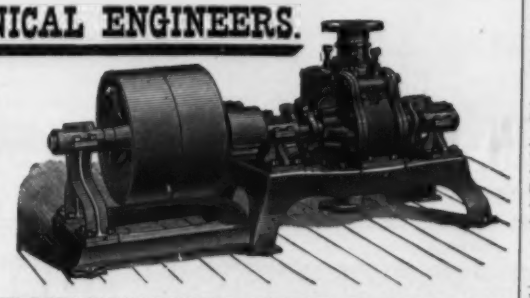

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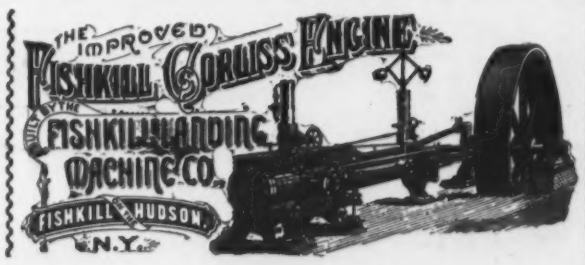

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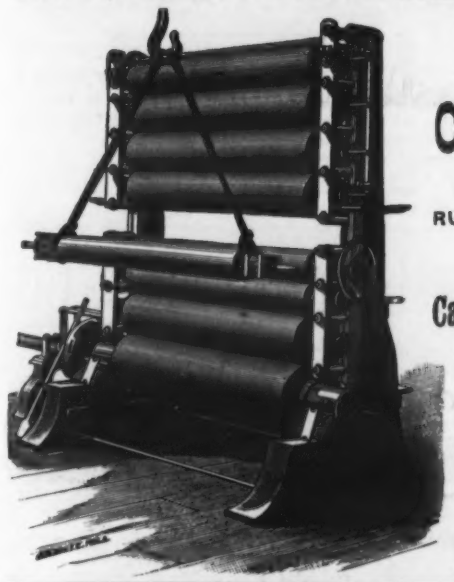

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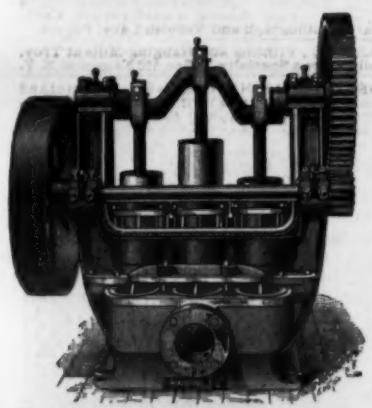

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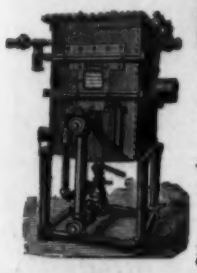

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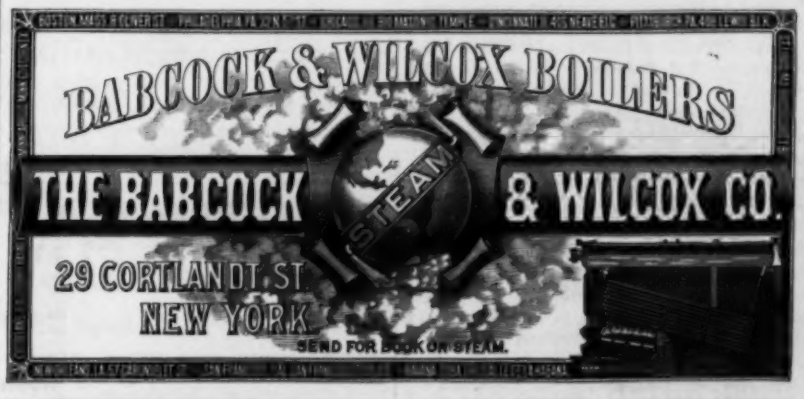

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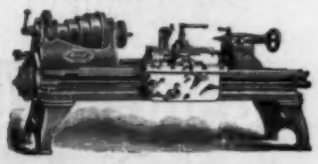

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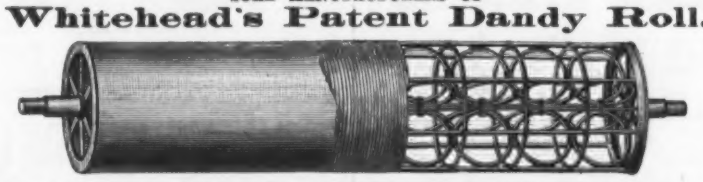

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